

# Chemical Week

December 4, 1954

Price 35 cents



**Says Los Angeles' Lauren Hitchcock, "It takes more than laws to lick pollution" . . . . . p. 24**

► **The pipeline leads to diversification as American Potash upgrades its products . . . p. 36**

**To sharpen selling: a refresher course to teach salesmen the customer's language . . . . p. 41**

**Three routes to ammonia from coke oven gas; they add up to a noteworthy trend . . . . p. 50**

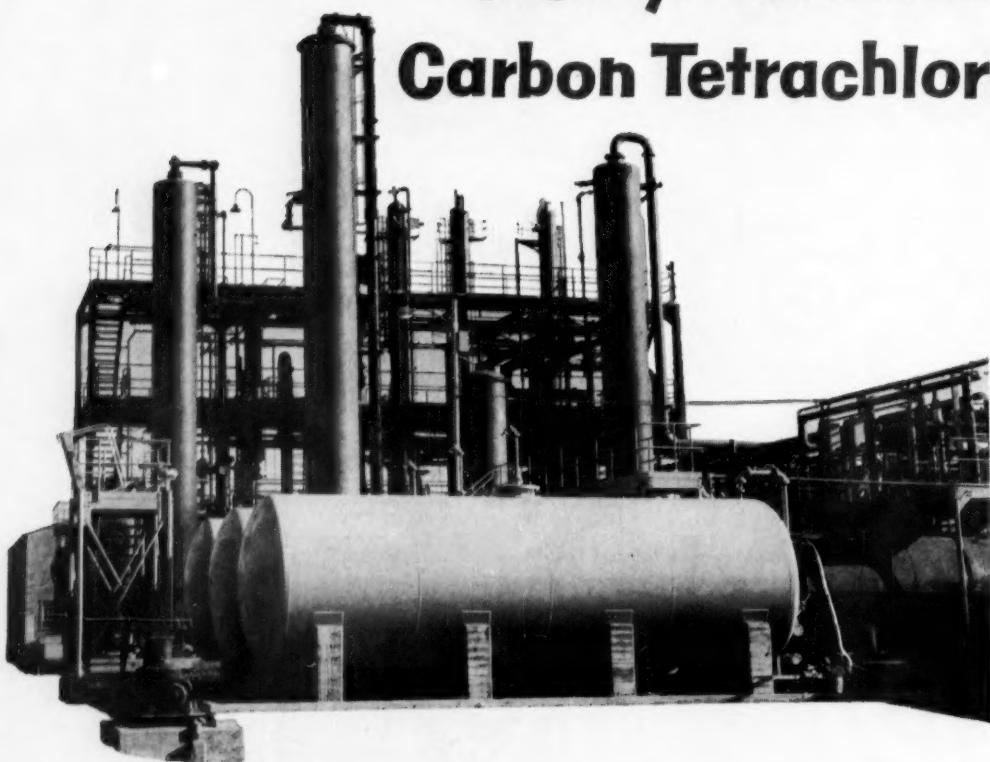
► **It's hard to miss if you sell through chains; here's how to go about it . . . . . p. 58**

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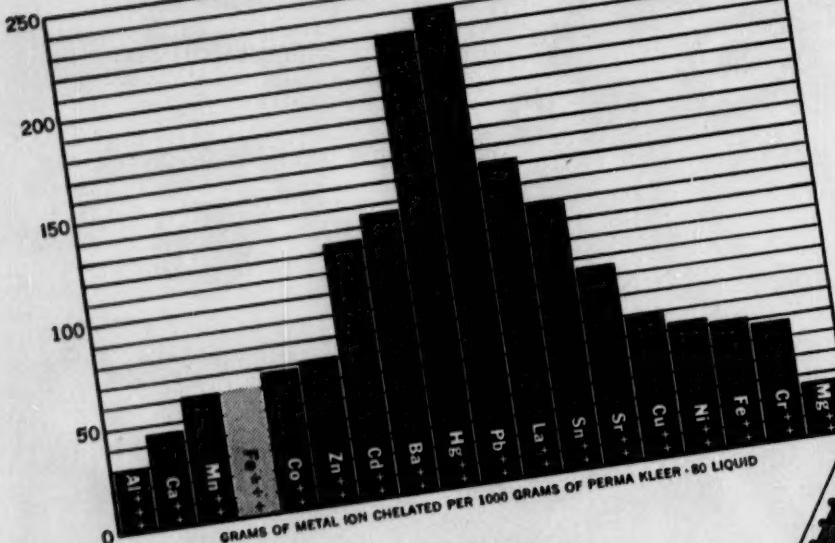
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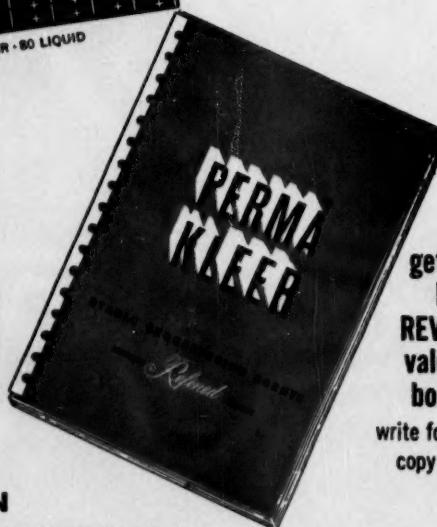
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NAME OF WAX	MELTING POINT ASTM D-127-30	PENETRATION 100G/77°/ 5 SEC.	COLOR N P A	ACID NUMBER	SAPONIFICATION VALUE	TYPE
CARDIS* ONE	195-200	1-2	4-5	12-16	55-65	EMULSIFIABLE PETROLEUM WAX
CARDIS* 314	184-189	4-6	4-5	13-16	45-55	EMULSIFIABLE PETROLEUM WAX
CARDIS* 319	180-185	5-7	4-6	18-20	65-70	EMULSIFIABLE PETROLEUM WAX
CARDIS* 320	180-185	5-7	4-5	28-30	75-80	EMULSIFIABLE PETROLEUM WAX
CARDIS* 262	195-200	3-5	BROWN	14-17	40-45	SPECIALLY PROCESSED PETROLEUM WAX
FORTEX	190-200	3-5	2½-3½	0.0	0.0	MICRO-CRYSTALLINE HARD AND PLASTIC
MEKON* B-20 A-20 Y-20	190-195 190-195 190-195	3-5 3-5 3-5	BROWN-BLACK AMBER-6 MAX. YELLOW-3-3½	0.0	0.0	MICRO-CRYSTALLINE HARD AND BRITTLE
POLYMEKON*	200-MIN.	0-3	YELLOW	0.0	0.0	SPECIALLY PROCESSED PETROLEUM WAX
WARCO WAX 180	180-185 180-185	4-7 4-7	WHITE BROWN	0.0	0.0	MICRO-CRYSTALLINE HARD AND BRITTLE
WARCO WAX 150-A	145-155 145-155	15-20 15-20	YELLOW 1-2 BROWN	0.0	0.0	MICRO-CRYSTALLINE PLASTIC
WARCOSINE	150-155	15-20	WHITE	0.0	0.0	MICRO-CRYSTALLINE PLASTIC
PARAFFIN	136-138 ASTM	FULLY REFINED				CRYSTALLINE
SUGAR CANE WAX 700	169-174	1.0-1.5	BROWN	25-30	70-90	VEGETABLE WAX
SUGAR CANE WAX TECHNICANE 500	171-176	3 MAX.	LIGHT BROWN	25-35	55-70	VEGETABLE WAX
SUGAR CANE WAX DUPLICANE* 517	165-170	1 MAX.	BROWN	20-30	65-75	VEGETABLE WAX

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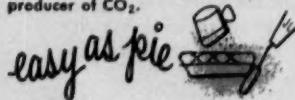
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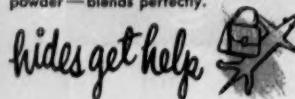
## MAKE WARWICK WAXES YOUR FIRST CHOICE FOR '54

# NEW JOBS FOR CO<sub>2</sub>

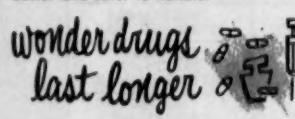
No other gas works so hard or so well—at so many jobs. These are typical examples of CO<sub>2</sub> at work. Scores of other applications, covering all industry, are available from Liquid Carbonic, world's largest producer of CO<sub>2</sub>.



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# OPINION

## Right Firm, Wrong Plant

TO THE EDITOR: In your news article entitled "For Prize Plants, No Takers" (Oct. 23), I have noted the statement that Great Lakes Carbon Corp. "has dickered with" the General Services Administration for the government magnesium plant at Velasco, Tex.

I would like to call to your attention the fact that this statement is in complete error since Great Lakes Carbon Corp. has not entered into any negotiations for the Velasco plant nor into any discussions with any government agency in this connection.

Therefore, I would very much appreciate your correcting the record on this subject . . .

S. W. MARTIN  
Vice-President  
Great Lakes Carbon Corp.  
Chicago

Sorry, Great Lakes Carbon did take a look at the Painesville, O., magnesium plant but no authorized representatives of the company actually "dickered with" GSA on the Velasco project.—ED.

## U. S. Exonerated

TO THE EDITOR: Re your mention of charges of chemical dumping . . . we are well acquainted with the Swedish market but we know of no instance where chemicals of U.S. production have been dumped on the Swedish market . . .

But on the other hand, much of the import business in chemicals in Sweden, formerly placed in this country, has been supplanted by imports from Germany, France, Italy, and from countries behind the Iron Curtain. . .

LEO M. GOLDSCHMIDT  
President  
All Over Export Co., Inc.  
New York, N.Y.

## More on Viscometry

TO THE EDITOR: Re your Research Dept. news article, describing the new viscometer developed by Edward Merrill at MIT . . . I think you would be interested to know that the *Journal of Colloid Science* in June, 1952, published an article by Asbeck, Laiderman and Van Loo, of the Sherwin-Williams Paint Research staff, disclosing the merits of viscosity measurement at very high shear rates. Features of the apparatus developed by that research have been recognized by allowance of claims to the apparatus by the U.S. Patent Office.

We firmly believe that this research

team established for the first time, means of scientific classification of paint systems correlating with practice as to brushability. Merrill's work, unless predating that of Asbeck et al, appears to accomplish, in more elaborate fashion, similar objectives at greater cost, and reflects development in philosophical concepts published in the article under the title of "A High Shear Method of Rating Brushability of Paints."

More recent articles discussing the merits of high shear rate viscometer measurements by one or more of the above authors include: "Residual Viscosity of Paint Systems at Infinite Shear Velocity," *Industrial and Engineering Chemistry*, June, 1954; . . . "Paint Viscosity and Ultimate Pigment Volume Concentration," presented at the Sept. 1954 ACS meeting . . .

The Asbeck-SW High Shear Viscometer, although of a high order of precision, will be of relatively nominal cost and readily available when present plans mature . . .

R. G. SMITH  
Patent Attorney  
The Sherwin-Williams Co.  
Chicago

CW did not suggest, of course, that any organization was first in the field. What we did was to report on a valid new development that is solving the viscosity measurement problems of one company—i.e., Dewey and Almy.

We must say, however, that we did point out that the Merrill instrument is still in the experimental stage of development. The comment that "the Merrill instrument appears to accomplish in more elaborate fashion the same objectives at greater cost" is, therefore, still a debatable one.—ED.

## Avoid Cure Costs

TO THE EDITOR: . . . I have noticed that your magazine pays a good deal of attention to news of legal developments and problems, and it seems to me that you are endeavoring to render a unique service to the chemical industries in so doing. For, I believe, that anything that a business magazine can

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do to clarify the complexities of the law for management—which is often not legally trained—is eminently desirable and constructive . . . And in that respect I should like to proffer a few opinions as to how you can improve your service both to corporation lawyers and to chemical executives . . .

Clemenceau once said that war is far too important to be left to generals. In the same vein, the chemical industry might well say that legal problems are far too important to be left to lawyers. All too often management assumes that it has met its responsibility in this area if, whenever a problem arises, it retains the best available counsel.

Ordinarily, a lawyer is not in a position to scrutinize all facets of a company's business on the alert for potential legal difficulties. He can take action only when questions are referred to him. The job of detecting possible legal problems thus falls primarily on nonlawyers.

Not infrequently, however, the most difficult thing about a legal problem is to recognize its existence. If the non-lawyers, who have the initial responsibility for discerning legal problems, are to do an effective job, they must have at least a general familiarity with the law applicable to their business.

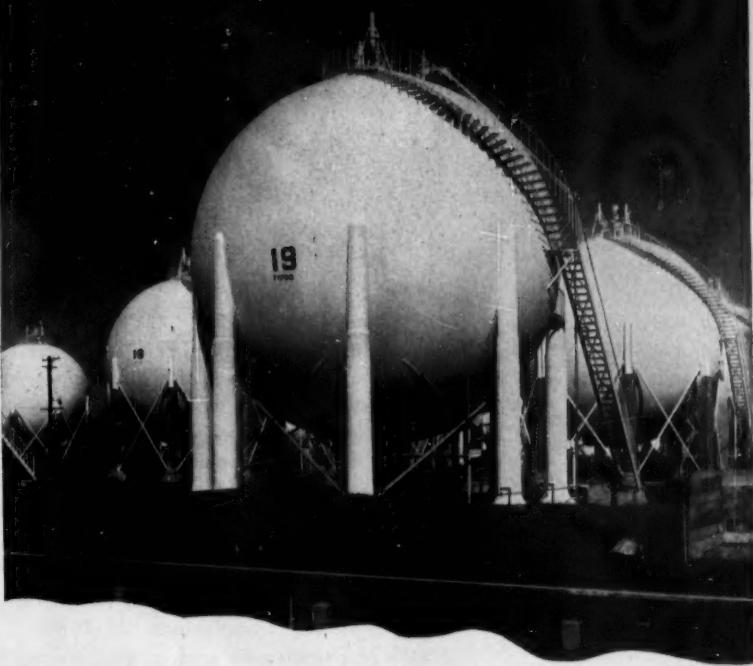
It would be unreasonable to expect chemists and chemical engineers to have such a detailed knowledge of the law as to be able to give sound answers to legal questions. But it is essential that they have sufficient knowledge of the law to be aware when a question exists.

This, it seems to me is where CW can be of great assistance to the bar. Lawyers find it very difficult in many cases to give their clients the necessary indoctrination so that they can recognize legal questions. For one thing, we are frequently so busy handling problems that are all too apparent that we have no time to initiate a search for others still undetected.

Also, lawyers are a somewhat suspect source of information. Laymen often assume, consciously or unconsciously, that a lawyer, because of his training, tends to overemphasize legal considerations. That's why general background information probably registers much more effectively when presented in your columns.

. . . I believe it would be helpful if you published simplified expositions of branches of the law . . . for example, of discussions of product liability, patents and trademarks, sales and purchase contracts, the protection that copyright affords, what misconceptions

# HORTONSpheres:



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KAY-FRIES

# Phenylacetic acid



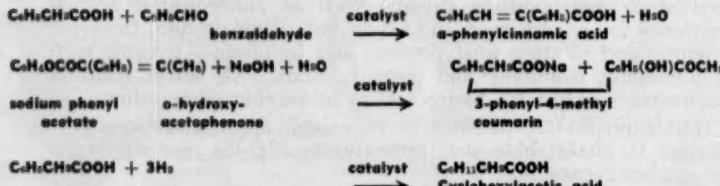
While the full potential of PHENYLACETIC ACID in synthesis has not been explored, a reactive methylene group has made it a valuable general organic intermediate. It is well-known as a penicillin precursor and has been mentioned as a plant fungicide and hormone. Other suggested uses are as an intermediate for drugs (antispasmodics, sedatives, antiseptics, and anticoagulants); perfume aromatics; and insect repellents. Kay-Fries also manufactures alkali metal salts of phenylacetic acid, both anhydrous and in solution.

## KAY-FRIES SPECIFICATIONS . . .

purity	• 99.0% minimum	ash	• .05% maximum
melting point	• 76° C. minimum	form	• White flakes

## Typical reactions of PHENYLACETIC ACID

Phenylacetic acid undergoes anhydride formation, chlorination to the acid chloride, esterification, amidation, in the normal manner of an organic acid.



(Varied conditions will give phenylacetaldehyde)

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## O P I N I O N . . . . .

are extant about FOB terms . . .

I trust that these suggestions may merit your consideration . . .

LEON C. BAKER  
President  
American TCP Corp.  
New York, N.Y.

Our thanks for some thought-provoking observations and welcome suggestions.—ED.

## Shared Viewpoints

TO THE EDITOR: . . . We have read with enthusiasm your news article "Help Wanted—to Sell Plastic Tooling" (Nov. 6, p. 82) . . .

It is well written and factual . . . beneficial to companies in the plastic tooling field . . . expresses viewpoints that, no doubt, are shared by many in the plastics industry . . .

PAUL A. RITCHIEY  
Kish Resin, Inc.  
Lansing, Mich.

## DATES AHEAD . . .

Synthetic Organic Chemical Manufacturers Assn., annual business meeting, Commodore hotel, New York, Dec. 6.

Agricultural Ammonia Institute, annual meeting and trade show, Jung hotel, New Orleans, Dec. 6-8.

American Pharmaceutical Manufacturers' Assn., combined midyear and Eastern section meeting, Waldorf-Astoria hotel, New York, Dec. 6-8.

Chemical Specialties Manufacturers Assn., annual meeting, New Yorker hotel, New York, Dec. 6-8.

American Institute of Chemical Engineers, annual meeting, Statler hotel, New York, Dec. 12-15.

Chemical Market Research Assn., joint meeting with CCDA, subject: chemicals in foods and feeds, Edgewater Beach hotel, Chicago, Jan. 20-21.

Plant Maintenance and Engineering Show, International Amphitheatre, Chicago, Jan. 24-27.

Chlorine Institute annual meeting, Biltmore hotel, New York, Jan. 26.

Assn. of American Soap and Glycerine Producers, annual convention, Waldorf-Astoria hotel, New York, Jan. 26-28.

Chemical Institute of Canada, protective coatings division conference, Royal York hotel, Toronto, Feb. 24; Ritz Carlton hotel, Montreal, Feb. 25.

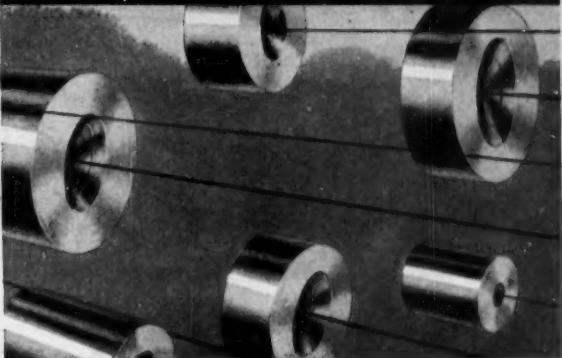
Drug, Chemical and Allied Trades section of the N. Y. Board of Trade, annual dinner, Waldorf-Astoria hotel, New York, March 3.

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**Capital Spending Plans for 1955 . . .**

# Here is Good News About Business Prospects

In 1955, American industry is now planning to spend within 5 per cent of the amount it is spending this year on new plant and equipment. This is the tensely awaited result of a check-up just completed by the McGraw-Hill Department of Economics.

Hundreds of companies, by far the largest number in the eight-year history of these McGraw-Hill surveys, cooperated in the check-up. Combined, they represent 29 per cent of all industrial employment and over 60 per cent of employment in the industries where capital investment is highest. Such a broad cross section constitutes

a reliable gauge of the plans of industry as a whole.

What is the meaning of these plans, detailed by the table below, for capital investment next year? Is it good or bad news, so far as it concerns the prospect of continuing prosperity? It is to this crucial question that this editorial is addressed.

## Key to Prosperity

**It is not only good but very important business news that American industry plans to spend in 1955 almost as much for new plant and equipment as it is spending this year.** The reason it is important is that a high level of activity in the capital goods industries is universally recognized as a particularly potent ingredient of prosperity for the nation as a whole. A dollar spent for capital goods is spent again and again for wages and materials. Its stimulating effects, called by economists multiplying effects, move through the economy in much the same way that a pebble tossed into a pond creates a widening circle of ripples. This is one reason why there is such intense business interest in the surveys of plans for capital investment.

Here are the principal reasons why the results of the McGraw-Hill survey are a good omen for continuing prosperity:

### PLANS FOR CAPITAL INVESTMENT

	MILLIONS OF DOLLARS			Percent Change 1954- 1955
	1953 ACTUAL*	1954 ESTIMATED*	1955 PLANNED	
All Manufacturing	\$10,026	\$ 9,249	\$ 8,598	-7%
Petroleum Industry†	4,600	4,875	4,920	+1
Mining	506	380	311	-18
Railroads	1,312	851	769	-10
Other Transportation and Communications	2,954	2,922	2,640	-10
Electric and Gas Utilities	4,548	4,274	4,206	-2
ALL INDUSTRY	23,271	21,784	20,727	-5

\*United States Department of Commerce; Chase National Bank;  
McGraw-Hill Department of Economics

†Petroleum refining, included under both "All Manufacturing" and  
"Petroleum Industry," is included only once in the total

**1. American industry is demonstrating that it does not need the stimulus of war-created shortages, or a rearmament boom, in order to maintain a very high level of capital investment.**

The slight decrease now planned for 1955 will still maintain a level only about 11 percent below the all-time peak attained in 1953 under the stimulus of a defense expansion boom.

**2. Capital investment promises not merely to stabilize at a high level, but actually to increase as 1955 goes on and thus give renewed stimulus to business.**

The level of investment now planned for 1955 by *industry* — manufacturing, petroleum, mining, transportation, communications and utilities — is within 5 per cent of 1954. Contract awards for *commercial construction* — stores, office buildings, warehouses and other service establishments — as compiled by the McGraw-Hill publication **ENGINEERING NEWS-RECORD**, indicate a substantial increase in 1955. Thus total capital expenditures by *all business* may be very close to this year's total.

Actually, in the fourth quarter of 1954, business capital expenditures, as reported to the U. S. Department of Commerce, are down about 2.5 per cent from the average for the year as a whole. So there is a good chance that during 1955 the annual rate of capital investment will rise above this present level.

### **Effect of Tax Changes**

The plans reported by the McGraw-Hill survey are preliminary plans, reported at the beginning of the period of business budgeting for 1955. As budgets are completed, new projects may bring the total expenditure that is planned even closer to this year's figure and thus make an even greater contribution to continuing prosperity.

But it also cannot be too strongly emphasized

that these are plans; they are not accomplished investments. As such they have the vulnerability to changed conditions that characterize any plans.

There is some indication in the results of the McGraw-Hill check-up that one change in conditions recently made by the United States government has had an important stimulating effect on plans for business investment next year. It is a liberalization of the allowances for depreciation. Apparently encouraged by this provision, most of the smaller companies are planning to maintain or increase their purchases of new equipment next year, whereas during the past three years their expenditures have been declining. This is obviously a development that strengthens our economy.

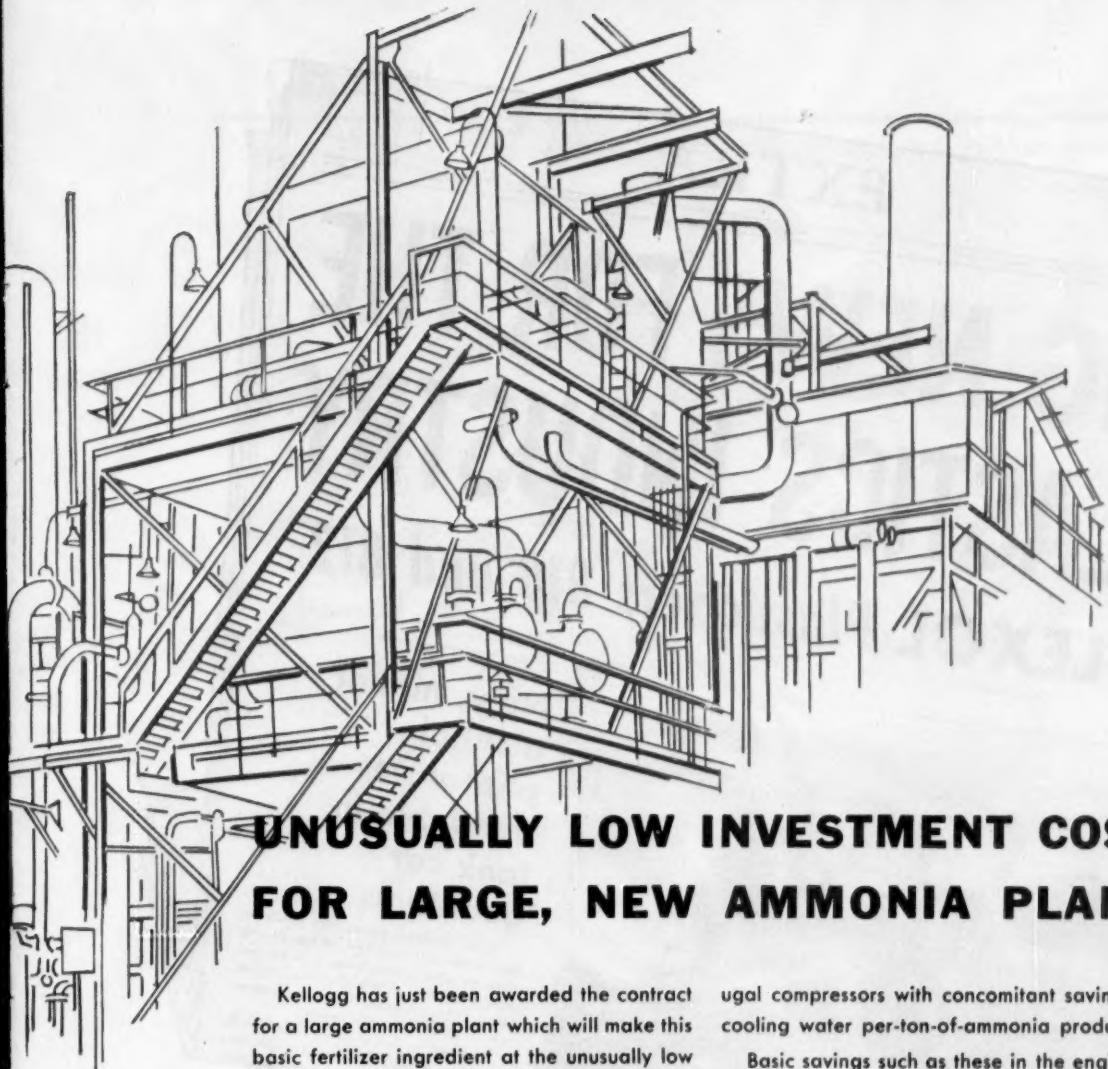
A government insensitive to the key importance of capital investment by business, both in providing prosperity and in raising our standard of living, might easily destroy the present plans. One of the easiest and surest means to do this is excessive taxation of business profits which are the key ingredient of business investment. Whether the extraordinarily constructive program recently enacted by the federal government in the field of business taxation can be sustained remains to be seen. **If it can be sustained, the remarkably cheering plans of business for capital investment in 1955 can readily become firm foundations for a continuing prosperity.**

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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*Donald C. McGraw*  
PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.



## UNUSUALLY LOW INVESTMENT COST FOR LARGE, NEW AMMONIA PLANT

Kellogg has just been awarded the contract for a large ammonia plant which will make this basic fertilizer ingredient at the unusually low investment cost of approximately \$50 per ton of annual capacity.

The plant, scheduled for completion in mid-1955, will be erected near Lima, Ohio, for The Standard Oil Company (Ohio). It will produce 300 tons of ammonia daily.

The major reason for the reduction in investment lies in the fact that the process employs only one ammonia synthesis section. Furthermore, operating experience with Kellogg ammonia converters has shown that they can be substantially reduced in size as can the heat exchangers without lowering capacity.

From the standpoint of operating costs, the new plant will have electrically-driven centrif-

ugal compressors with concomitant savings in cooling water per-ton-of-ammonia produced.

Basic savings such as these in the engineering of chemical processes are typical of Kellogg's *Engineering for Tomorrow* — creative engineering that can increase the profit potential of any chemical or petrochemical project.

### TYPICAL RECENT KELLOGG CHEMICAL PLANT CONTRACTS are in the fields of:

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*The term "Flexol" is a registered trade-mark of Union Carbide and Carbon Corporation.*

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## NEWSLETTER

The Dept. of Agriculture has joined the Health-Education-Welfare Dept. in proposing rules for pesticide certification under the Miller amendment to the food and drug laws. Pesticide tolerances are set by H-E-W (*CW*, Oct. 30, p. 96) after Agriculture certifies that the material is required for crop production. USDA's proposed regulations appeared in the Federal Register last week (Nov. 24).

Got a good, cheap propionamide synthesis? If the price is right, this material may vie with urea as a protein substitute in animal feeds. Ammonium formate, ammonium acetate, ammonium propionate, formamide and propionamide were tested at Iowa State College; ammonium formate and propionamide showed up best, but the nod goes to the latter because it appears to be completely nontoxic.

Eli Lilly has set up a new Agricultural Products Division to enter the farm market, and Stilbosol is its first product.

Iowa State College research is also behind the new Lilly product—a premix of diethylstilbestrol for cattle feeds. The synthetic hormone has a growth-stimulating effect on both steers and heifers (*CW Market Letter*, Nov. 18). Lilly says that the premix cuts feed costs by 2-4¢ per pound of gain, increases daily gain by  $\frac{1}{2}$ - $\frac{3}{4}$  lb., boosts profit margin per steer as much as \$22.

Judges this week are picking the winners in the Chemical Specialties Manufacturers' Assn.'s aerosol packaging contest, will announce winners in 10 product categories next Tuesday at CSMA's annual meeting.

Nearly 300 products are entered, ranging from industrial lubricants to colognes. Most of them are domestic, but there are entries as well from six foreign countries.

Sale to a U. S. firm, Rayonier Corp., of a majority interest in Alaska Pine & Cellulose (*CW*, Nov. 27, p. 36) touched off an explosion among Canadian politicians. The "outs" in British Columbia charge the "ins" with mishandling of forest management licenses, contend that "monopoly control" is being handed over to a few large corporations.

"It is not surprising," says one critic, "that powerful American capitalists should be looking with covetous eyes in this direction. It is the duty of the government to protect the public interest."

But Premier W. A. C. Bennett injects a soberer view: "The essential question is not who owns some of the shares today or tomorrow but whether employment continues steady and the plant continues under efficient management."

Nevertheless, the opposition parties intend to make forestry policy a top issue in next year's legislative session, and their actions will certainly affect U. S. investments in British Columbia. Likely demands: periodic review of forest management licenses to modify the perpetual franchise now granted; control over issuance of licenses to give "equal chance to the small logger," in one legislator's words.

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## NEWSLETTER

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Before long you'll get Forms from the U. S. Bureau of the Census requesting data for the 1954 Censuses of Business, Manufactures and Mineral Industries, which will cover more than 3.3 million business establishments and update censuses that are now 7 to 15 years old.

Data required from manufacturers will include: plant identification; nature of activity; company affiliation and ownership; employment and payrolls; man-hours; cost of materials, fuels and electrical energy consumed; water consumption; horsepower rating of power equipment; inventories; capital expenditures; materials consumed; products shipped.

The Commerce Dept.'s word to the business community: you asked for these censuses; now cooperate. "The value of the censuses depends largely upon prompt and accurate reporting by business, and speedy compilation and publication of the results by the Census Bureau. Thus, the bureau and American businessmen jointly share the responsibility."

An Export-Import Bank loan of \$1.5 million will purchase chemical process equipment for a \$5-million DDT-solvents-detergents plant at Suzano, 30 miles from Sao Paulo, Brazil, due to be completed in 1957. The 5½ bank loan matures in 7½ years.

Participants in the venture are W. R. Grace, Farbwerke Hoechst and American Home Products—roughly on a 40-40-20 basis.

The Commerce Dept. is also getting back to its peace-time schedule on industry publications. Out next week will be the first issue of a new monthly "Chemical and Rubber Industry Report" replacing the two reports, "Chemicals and Drugs" and "Rubber," discontinued in 1950.

Feature of the first (November) issue: a rundown of current, a-building and planned anhydrous ammonia facilities. The next few issues will review the 1950-54 period to bring Commerce's published record up to date. Subscription price: \$1.75 a year, from the Government Printing Office, Washington 25, D. C.

Office of Defense Mobilization's latest list of fast tax write-off certificates includes:

- International Petroleum and Chemical Exchange (Lake Charles, La.), \$6.7 million at 100% and \$3 million at 50% and 35% for aviation alkylate.
- American Enka (Enka, N. C.), \$1.1 million at 50% for research and development facilities.
- Carborundum Co. (Niagara Falls, N. Y.), \$553,000 at 55% for laboratory facilities.
- Shell Chemical (Deer Park, Tex.), \$192,000 at 40% for glycerine storage and transportation.
- Humble Oil & Refining (Baytown, Tex.), \$236,500 at 100% for alkylate facilities.

New products—one for poultry, one for passenger cars:

- Merck has developed a new coccidiosis preventive as an additive for chicken feed. Called Nicarbazin, it's 4,4'-dinitrocarbanilide and 2-hydroxy-4, 6-dimethylpyrimidine combined in a molecular complex. Cleared by FDA, it will be commercially available early next year.
- Standard Oil of Indiana already has a carburetor de-icing additive in its premium gasoline; but now it's adding another: an "anti-freeze" to prevent ice formation in fuel lines during winter months.

... The Editors

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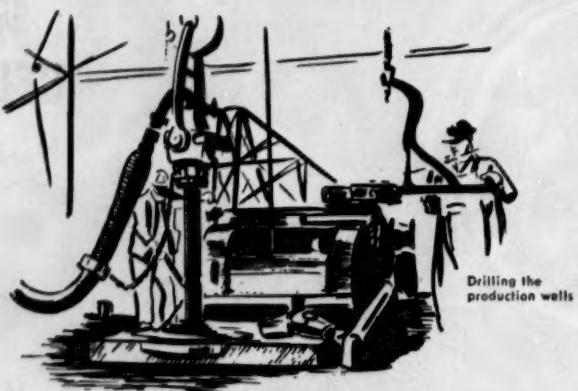
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## BUSINESS &amp; INDUSTRY . . .

**First Under Fire**

Acting under the authority granted it by the Customs Simplification Act of 1954, the Treasury Dept. has referred a dumping case (involving imports of muriate of potash from the Soviet zone of Germany) to the Tariff Commission for further study. The Tariff Commission's job now will be to determine whether sales of the potash in this country are injuring or threatening domestic industry.

At the same time, Treasury says it has under consideration "several other possible dumping cases involving muriate of potash from other European countries."

Under current law, if the Tariff Commission finds that domestic industry is being harmed, the government can impose duties to make up the difference between the price at which imports are being sold in the U. S. and the foreign market value.

**Framework for Future**

Quietly and without much publicity so far, a score of commissions, committees, study groups and task forces have been erecting the framework for the next two years' legislative recommendations of the Eisenhower Administration.

While the reports of some groups are of only indirect interest, the proposals of others—on such subjects as tariffs, antitrust laws, natural gas pricing—will be the basis of laws under which the chemical industry must live.

Probably the most important single bundle of reports will be those coming from the second governmental streamlining commission to be headed by Herbert Hoover. This time around, the ex-President has working for him a group of task forces that have been looking into government agencies to find out whether any of their functions could be dropped entirely or could better be done either by nonfederal agencies (like the states) or by private industry. Thus, the commission's recommendations are expected to be even more sweeping than those of the earlier Hoover group, which could only recommend improvements.

Here's a rundown on some of the key issues being investigated:

- Antitrust. The Attorney General's

committee on antitrust laws is due to report by Jan. 31 to Attorney General Brownell. They're expected to recommend withdrawal of antitrust exemption for labor unions that have stepped beyond the limits of collective bargaining, soften the antimerger law, possible revision of the Robinson-Patman Act, and repeal of the McGuire "fair trade" law.

- Natural gas pricing. The cabinet committee on fuels policy, which reports this week to the President, is expected to recommend removal of price controls on independent gas producers.

- Tariffs. The cabinet committee on mineral policies, whose formal report to the President has been delayed by Interior-State clash on tariffs, has already turned down a proposed zinc-lead tariff increase, but has recommended higher stockpile goals for such materials.

- Convertibility, export aids. The citizens' advisory group of the Senate Banking Committee will report by Jan. 31 on ways of aiding U.S. exporters. Export subsidies, convertibility insurance, nonexpropriation guarantees will be discussed.

- Water resources. Interim report of the cabinet committee on water resources is expected shortly; final report is to come by March 1. The Hoover Commission task group report is due by May 31. Both will recommend scope of federal activities on power, pollution control.

- Food and drugs. By its May 31 deadline, the Hoover Commission may recommend some significant changes in Food & Drug Administration operation levels, especially in such fields as antibiotic certification. Food & Drug's own citizens' committee is still to be named.

**Loophole Spotted?**

A boom in research grants may be shaping up this week as a result of swiftly moving changes in tax rules. And if such is the case, chemical companies will be well in line to profit—particularly companies that rely heavily on the fruit of foundation-granted studies.

Congress started the ball rolling when it changed the tax law last summer—listing grants to researchers up to \$300 a month (and extending for

36 months) as "nontaxable income." Then, just a fortnight ago, the U.S. tax court in New York gave impetus to the surge by ruling that a grant made even under the old law should be considered as gift, instead of as income—as the Bureau of Internal Revenue had ruled.

There's one catch in the present ruling, however. Both under the new tax law and under the tax court ruling, grants must be made by tax-free, non-profit organizations. A business still can't award tax-free grants under the interpretation government officials are now giving the new law or under the court decision. There's nothing to prevent firms from establishing foundations, though, so that the more liberal tax treatment can be handed out freely.

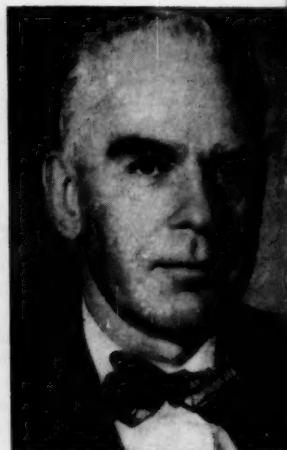
**Test Case Decision:** Subject of the New York ruling that sets the stage for all the excitement is a \$1000 grant from the Guggenheim Memorial Foundation to an English professor, George W. Stone, Jr., of George Washington University, Washington, D.C. But, tax officials point out, the same type of reasoning ("that the award was a grant for distinctive achievement, not for services to be rendered, hence not taxable") would follow for the study of any chemical specialty made by a qualified researcher.

It's possible that tax officials may appeal the court's decision. And in that case, it could be several years before the case reaches the Supreme Court for final settlement.

But observers are predicting that government attorneys will probably decide to give up the fight. Reason: when viewed from strictly legal position, the new tax provision is actually much broader than the New York Court decision. It doesn't mention the "qualified researcher angle", simply says scholarship and fellowships can be excluded from taxable income up to the \$300 and 36-month limit.

Dropping the case, however, would unquestionably set off a big rush for refunds from researchers who have already paid taxes on grants under the internal revenue ruling within the past three years.

In any event, the answer will come soon. If the government decides to appeal the Stone case, it has until Dec. 20 to file its notice of appeal.



**MODERATORS:** On research, Cyanamid's Swain; public relations, Du Pont's Brayman; depreciation, Columbia's Dohr; sales, Columbia's Alexander.

## Something Engrossing . . . For Everyone

A myriad assortment of topics were offered at the Manufacturing Chemists' Assn. forum at New York's Hotel Statler last week. There was something designed to suit everybody's taste—from a matter-of-fact look at the latest in tax rulings to a close study of the incendiary problem of tariffs and international trade.

Causing the greatest stir, however, were some shocking figures set forth by John Dunning, Dean of the School of Engineering, Columbia University, on the subject of Russian scientists. Matter-of-factly, Dunning warns that, from anybody's standards, the Russian program for research has been amazingly successful. Moreover, they're not giving any sign of letting up on their

intensive drive on scientific development. Last June, Russia graduated about 2½ times as many engineers as were graduated in the U.S.; Russian science students (still in training) currently outnumber those in the U.S. three to one. That means that the edge (now estimated at 100,000) that the U.S. has in scientifically trained men is dwindling fast; and judging from latest university surveys the situation "is due to get a lot worse before it begins to get better."

Making the need of encouraging U.S. scientists even more pressing: Russia's first hydrogen weapon, according to Dunning, appears to be a great deal better than the first U.S. model; and scientists and technical

personnel are starting to take over greater managerial control of Russian industry. (The trend's even starting to become apparent in government circles; more than half of the Politburo, starting with Malenkov, have scientific training.) Further: Russian scientists, Dunning claims, are now paid much better, in proportion to labor, than are scientists in the U.S.

Over-all effect of this massive scientist-spawning program in Russia is inevitable, if the U.S. doesn't sit up and take notice—and quickly. The U.S. is in critical danger of losing the scientific manpower race . . . a race "upon which may hang our very existence."

Motivation for MCA members (and



. . . on automation, SOD's Murphree; tariffs, Allied's Hansen; taxes, Philadelphia's Gemmill; contributions, Pittsburgh Plate's Hazard.

all other members of the chemical industry) to do something about inculcating youngsters with an interest in chemistry early in their lives, agreed MCA President William Foster (at the luncheon meeting), is obvious. There's a serious and sobering suggestion that the U.S. may have used up its bank account of fundamental research. From the standpoint of long-term self-interest alone, support of universities is a must for chemical companies today.

**Divine Discontent:** Carrying out the international flavor was Walter J. Worboys, president, Imperial Chemical Industries, Ltd., and chairman of the British Chemical Manufacturers—the United Kingdom's counterpart of MCA. Noting that Britain, too, is imbued with a sense of "divine discontent today" . . . and is determined to dig a firmer foothold in world chemical circles, Worboys made special note of the fact that British chemical manufacturers are doggedly resisting the threat of nationalization. "Good public relations is the best way to fight adverse legislation," he notes, and British producers don't intend to let the matter go by default."

Reason for the acute interest in "productivity" in Britain, he goes on, is basically caused by the relative age and size (younger and smaller) of companies in England. "The best in the U. K. is equal to the best in the U. S.; but there's no comparison of averages."

**Back to the U. S.:** "So far as employer-employee relationship is concerned," pointed out Roy Wentz (a Du Pont tax attorney) in one of the several afternoon forum sessions, "the new tax law in the U.S. is undoubtedly disappointing. On the one hand, the problem of deferred compensation is still fuzzy; and on the other, certain changes (e.g., disability benefits and contributions "not now taxable income to the employer) are likely to prove to be real jokers."

On the credit side: the new tax law should clean up once and for all the thorny problem of distribution of stock dividends — by making them totally non-taxable.

Harking back once more to the theme of foreign chemical industries was another afternoon session on tariffs.

Kickoff panelist, Dow's Lewis Lloyd, noted that chemical imports into the U.S. have increased by more than 500% since 1948, with most of the increase coming from the United Kingdom and West Germany.

Merck's John Horan—warning of tariff-cutting bills expected to be in-

troduced in the new Congress—urged MCA members to take part in formulation of U.S. tariff policy—all in the interest of maintaining a strong chemical industry here. Du Pont's Fred Singer traced the rise of the General Agreement on Tariffs and Trade, and suggested that MCA members will have a chance to speak up when and if the GATT pact is submitted to Congress.

In all, a thought-provoking, thought-challenging day.

### Fighting on Two Fronts

In Washington and New York, the battle roars on between the importer and the domestic producer of synthetic star sapphires and rubies.

This week, lawyers for importer W. C. Von Clemm were scheduled to question two officials of Union Carbide's Linde Air Products Co. division in a pretrial examination in connection with Von Clemm's patent infringement suit in Federal District Court, New York. And in Washington, attorneys for both sides are preparing for a Court of Customs and Patent Appeals hearing, in which Von Clemm will ask for reversal of the U.S. Tariff Commission's decision that Linde was being subjected to unfair competition.

Von Clemm's appeal of the Tariff Commission ruling—filed last week—is the sixth case of its kind to come before the appeals case within the past 25 years. (Three of the earlier cases also involved chemical products: bakelite, iron oxide pigment, and phosphates.) The commission found that the imports constituted unfair competition because the synthetic gems were manufactured by a patented Linde process and without Linde's permission (*CW, Oct. 9, p. 15*). Von Clemm denies that his West German suppliers have been using the Linde process, and in his New York civil suit he's asking the court to throw out the Linde patent as invalid (*CW, Nov. 27, p. 22*).

At issue in the Washington tiff: whether the Tariff Commission can base a ruling on a patent that's being contested. Von Clemm asserts that the commission should have waited for the outcome of the patent suit before assuming that the Linde patent is valid. Linde, on the other hand, maintains that the patent's validity is above question, since it was upheld in district and circuit courts in 1951 and '52, and because the Supreme Court declined to review that verdict.

If the Tariff Commission's exclusion order is affirmed in the appeals court, the importer then has no further legal redress.

### Green Light Again

The green light is flashing again for a few more chemicals and related products that have been cleared for shipment to the Soviet nations in Europe—if any firm orders for such products are forthcoming.

Harold Stassen's Foreign Operations Administration has dropped permanganates, phosphoric acid, liquid gum inhibitors and petroleum coke from the list of items embargoed for shipment to the Soviet bloc. Other chemical process products have been downgraded in importance, so far as East-West trade controls are concerned.

Controls have been relaxed on crude petroleum and diesel oil, but are retained on highly refined petroleum products. Nonmilitary types of tires



WIDE WORLD  
**FOA'S STASSEN:** More chemical controls dropped, but with little effect.

were taken off the list, but natural rubber is being kept under surveillance to control the amounts shipped behind the Iron Curtain.

**Explosives Barred:** Chemical products that are still embargoed include hydraulic fluids, barium nitrate, dinitrotoluene, hydrazine, picric acid, silicone oils, detonating and priming mixtures, stabilizers for explosives, glycols, gasoline, kerosene, lubricating oils, blending agents for aircraft fuels, tetraethyl lead, butyl synthetic rubber, military-type tires, water-lubricated bearings made with buna-N compounds, nylon parachute cloth, certain types of optical glass, paper for dielectric use, toxicological agents, propellants and explosives.

Chemical and petroleum equipment

## BUSINESS & INDUSTRY . . .

still under embargo includes explosives manufacturing machinery, centrifugal countercurrent solvent extractors, plants and equipment for titanium production, compressors, pumps, pipes, tubing, equipment for oil drilling and refining and natural gas treatment, and equipment for production of these chemicals: nitrogen peroxide, antibiotics, heavy water, liquid oxygen and liquid hydrogen.

Over-all, the international embargo list was cut from 260 items to 170, and the list of products under constant surveillance from 100 to 60. Theoretically, this should lead to an increase in East-West trade; but — because of the Soviets' limited ability to pay for increased imports—any rise in trade is likely to be small indeed.

## COMPANIES . . .

The board of directors of Hooker Electrochemical Co. (Niagara Falls, N.Y.) meets this week to consider the advisability of calling for redemption on Dec. 31, the outstanding shares of the company's cumulative second preferred stock, Series B. Current redemption price: \$103/share. If the call for redemption is issued, company officials say, the holders of Series B preferred stock, will receive notice thereof—probably within the week.

**Pennsylvania Salt Manufacturing Co.** has acquired all patents and assets of the Gilron Products Co. (Cleveland, O.). Effective immediately, the company will be operated as a component part of Pennsalt's Chemical Specialties Division.

### More company incorporations:

- Martin Chemical Co., Inc., has filed a charter of incorporation in Dover, Del., listing capital stock at \$75,000.
- Reinforced Plastics Corp. has filed a charter of incorporation in Dover, listing capital stock at \$10,000.
- Union Chemical & Materials Co. has filed a charter of incorporation in Dover, listing capital stock at \$1000.

**Catalin Corp. of America** will henceforth get all its styrene molding products from Dow Chemical Co. under terms of an agreement signed last week by officials of both companies. At the same time, Catalin leased its polystyrene-producing plant at Chicago to Dow.

**Foramino, Inc.** has been organized by three former executives of O-Cel-O Division, General Mills, in Buffalo,

N.Y., to produce cellulose sponges and chemicals. Plant facilities will be located at Kenova, W.Va.; production is slated to start within the next six months.

**Creditors of Gulf Chemical Co.** have received notice from George Butler, a Houston, Tex., lawyer, that he has formed the Butler Chemical Co. to take over Gulf's operations. No details of the plan are as yet available.

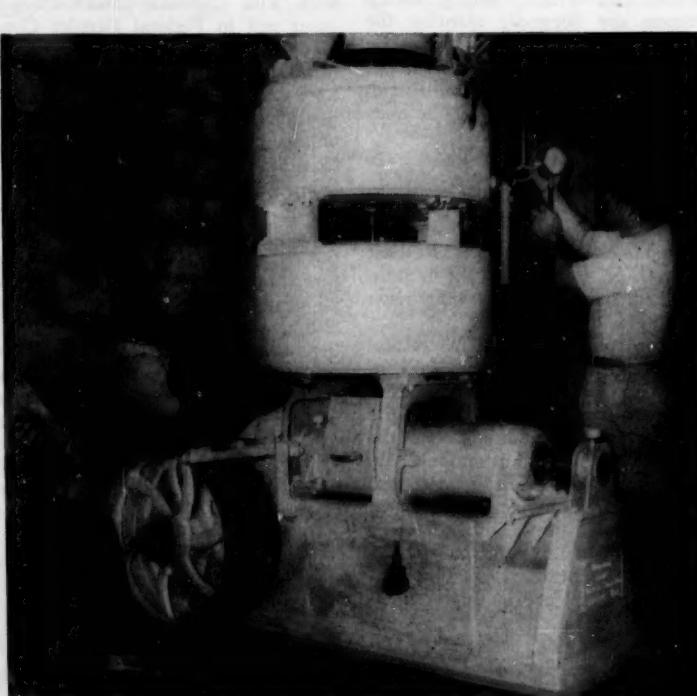
**Wallace & Tiernan Inc.** has completed negotiations to acquire Maltbie Laboratories, Inc. (Newark, N.J.). Maltbie stockholders will receive three shares of Wallace & Tiernan stock for each share of Maltbie stock.

Maltbie volume of business in the ethical drug field is presently about equal to that of Wallace & Tiernan.

## EXPANSION . . .

**Pentachlorophenol.** Reichhold Chemicals, Inc. is building a 6-million-lb./year pentachlorophenol plant in Seattle, Wash., due for completion by next March. Said to use a new chlorination process (that Reichhold has been developing since 1947), the plant should be able, company officials claim, to supply one-third of the annual U.S. demand for pentachlorophenol.

**Carbon Black.** Columbian Carbon Co. has brought the first units of its 20-million-lb. carbon black plant in St. Mary Parish, near Franklin, La., on-stream. When construction is completed toward the close of 1955, output from the company's three units at the plant should reach an estimated 60 million lbs. annually.



## Determined and Striving

DEEP IN THE HEART of the Gold Coast—a British West African colony—there's a big drive on today to construct chemical production facilities. Within recent months the Gold Coast Industrial Development Corp. has built a new edible oil manufacturing plant; some seven other ventures are under considera-

tion. Top candidate: an oil-expression plant, pilot plant for which is already in operation. Known chiefly as a major manganese producer (its average 70,000 tons/month is second only to the U.S.S.R.), the Gold Coast is also planning to exploit its tremendous aluminum reserves in the near future.

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**DISTRIBUTION:** Through its expanding network of denaturing plants, sales offices, and distribution points, CSC is setting new standards of dependability of deliveries in every quantity—tank-car, tank-truck, compartment tank-car, drums or smaller quantities.

**QUALITY:** Commercial Solvents Corporation's pioneering history in alcohol research and production extends back more than a century to the Rossville distilleries built in 1847 on the banks of the Ohio in Indiana. This past experience plus careful quality control provide your assurance of a product that meets the most exacting specifications in industry.



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CLINERCALES, LOS ANGELES

**POLLUTION FIGHTER HITCHCOCK:** In Los Angeles smog, he sees . . .

## New Challenge to Chemists

"Probably 95% of our pollution is due to incomplete combustion—a job for chemical research."

Out in Los Angeles—where smog has become a political football, a way of life, and a handy theme for Hollywood gag writers—the people who've had scientific training and industrial experience are mounting a campaign this week to persuade the public that air pollution can't be eradicated by decree.

Heading up the movement for a thorough, concerted attack on smog is Lauren Hitchcock, a chemical engineer with some 15 years' experience in the chemical industry. As president of the Southern California Air Pollution Foundation, he's trying to convince the taxpayers, voters, and public officials that the only sure way to beat the smog is through carefully planned research that will put the finger on the exact causes of this costly nuisance and lead to discovery of effective prevention methods.

During the past two months, a heavy siege of smog whipped up such a storm of public wrath that the clamor of "action-right-now" zealots



"As Compton said, scientists have duty to deal with unpleasant by-products of discoveries."

drowned out the voices of moderation. Industry was branded as the arch-villian in oversimplified theories that called for punitive laws in the belief that pollution can be halted by policemen, courts and jails.

**"Unwilling Test Tube":** But a change in the weather ended the

## B & I. . . . .

atmospheric temperature inversion that had held the smog in place for three weeks, and after the election, things calmed down to the point where people could discuss pollution without passion. In that more reasonable climate, Hitchcock launched the drive for a greatly stepped-up anti-pollution research program (*CW Newsletter*, Nov. 27) aimed at licking the smog problem in about five years without wrecking the Los Angeles industrial community. To get a line on this projected program and what it may mean to the chemical industry, CW last week interviewed Hitchcock, found him working on plans to set up a pollution information bureau.

"The nontechnical public," Hitchcock told CW, "has no idea of the complexity of the problem." If citizens were better informed, he figures, they would "lay off" of the people trying to do the job, be more willing to ante up the funds for intelligent, large-scale research work.

While Los Angeles is possibly the country's most smog-smitten city now, Hitchcock is emphatic in his belief that smog is becoming more and more a threat in many other large industrial cities. He believes smog is an inevitable by-product of this century's technological urbanization, with an increasing concentration of people, factories, and autos. So, he avers, it behooves other cities to pay attention to what Los Angeles is learning, as a kind of unwilling test tube. "In our urban areas," he says, "we can no longer simply rely on the weather for ventilation."

**Can't Afford to Guess:** Hitchcock constantly stresses the magnitude of the problem. "There's been too much talk of a quick solution," he charges. "The feeling is too common that all you have to do is pass a couple of ordinances, turn a few valves."

For one thing, he thinks people





"Los Angeles has spent \$750 million on water supply; should be willing to spend like amount for good air."

haven't been realistic about the amount of money that may be needed. "The Los Angeles Basin has spent \$750 million to develop its water supply, \$300 million for sewerage, \$97 million for harbor facilities, several billion for highways," he reminds. "We should be willing—if necessary—to spend comparable amounts for good air."

The theory that smog is mostly the result of photochemical reactions between hydrocarbons and ozone is now pretty generally accepted, but Hitchcock contends that a great deal more research is needed to prove or disprove that theory beyond a doubt, to throw light on the chemistry of the reactions, and to find out just what hydrocarbons are guilty and where they're coming from. Hitchcock—like other workers in the field—doesn't want to make the mistake of concentrating on any one suspect that might later turn out to be innocent. Such a mistake was made in Los Angeles some years ago when early evidence pointed to sulfur dioxide as the major culprit. After a drive that resulted in a 50% cut in sulfur dioxide emission, it was found that the smog was getting worse. Hitchcock shudders at the thought of the public outcry that would go up if owners of the county's more than 2 million autos were required to install exhaust controls as the final solution—and smog remained.

**Morals and Profits:** It was largely because of the challenge of the smog problem that Hitchcock accepted the Foundation post. Also, Hitchcock—who holds three chemical engineering degrees from Massachusetts Institute of Technology—recalls a remark by

MIT's Karl Compton to the effect that scientists and engineers have a "moral responsibility" to deal with the unpleasant by-products of their technological discoveries. Having served humanity a technological banquet, including autos and factories, the scientists now can tackle the dishwashing.

In this, Hitchcock feels that the chemical industry has a big role—and possibly a profitable one. "Probably

95% of our present air pollution is due to incomplete combustion," he says. "This is a job for the chemist and the chemical engineer—who is better qualified to attack combustion research." As one possible contribution of the chemical industry, he suggests this: if tetraethyl lead, for example, has such a profound effect on combustion, then perhaps some other chemical can push combustion still closer to 100%.



## Renewed Life—In an Old Setting

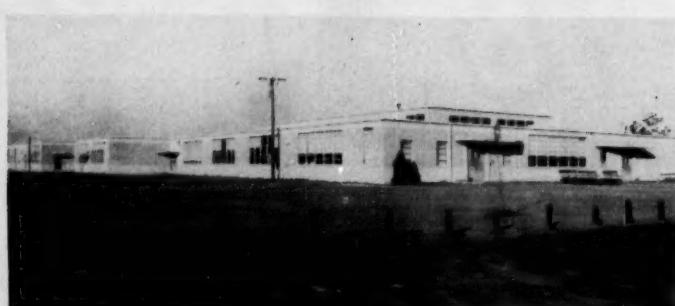
FROM EARLY TIMES, Ceylon's salterns have been exploited—but never on a scale large (and profitable) enough to enable the islanders to cash in on export markets. Now however, thanks to U.N. technical

aid, great strides are being taken. Most major salt companies, such as the Hambantota Salt Works, have introduced improved methods of production (*below*), are predicting vastly increased harvesting this year.





BOARD CHAIRMAN CROSBY—whose firm helped build both white students' high school (upper right) and combined grade and high school for Negroes (lower right)—puts his . . .



TODAY'S PHOTO SHOP

## Chemical Firm in National Controversy

At least one chemical company will feel intimately concerned when the U.S. Supreme Court hears arguments—possibly in January—on the terms of the decree to be drafted as a follow-up to the high court's ruling last May 17 that racial segregation in public schools is unconstitutional.

Numerous chemical firms with plants in the South may be indirectly affected—for example, in state and local school taxes—by the court order to be issued next spring; but Crosby Chemicals, Inc., with plants in Picayune, Miss., and De Ridder, La., has publicly taken a stand on the issue. And thereby hangs a unique tale of a chemical company's community relations.

In a full-page advertisement in a local newspaper, Crosby Chemicals came out in favor of continued segregation. If the Negro citizens insist on integration, then the company will advocate turning the public schools over to private sponsors who would continue the operation of separate schools for white and Negro children.

**Leading Donor:** Crosby Chemicals can claim a particular interest in the public schools of the two communities in which its plants extract rosins, pine oils and other naval stores specialties from pine tree stumps. In both towns, Crosby has been a leading benefactor to the public schools.

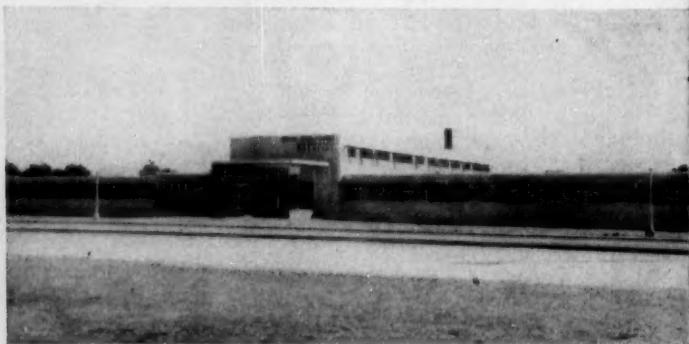
At Picayune, Crosby has made do-

nations for a number of school projects, and has helped pay Negro teachers' salaries. It helped finance addition of a cafeteria, auditorium and four class rooms to the school for Negro children; it put up the money to enable that school's library and home economics department to meet state standards; it contributed to the library in the white students' high school, and paid nearly the entire cost of its football stadium, said to be the best high school stadium in the state.

At De Ridder, Crosby recently built, equipped, and gave to Beauregard parish a Negro school regarded as equal or superior to the school for white children; also donated a gymna-



AT PICAYUNE, company built office and plant (left); hospital where whites, Negroes get equal treatment in separate wings.



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  - Isobutanol
  - n-Butanol
  - Celanese Solvent 203
  - Celanese Solvent 601
  - Celanese Solvent 901-H
  - Methanol

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CHEMICALS

\*Reg. U. S. Pat. Off.

sium for white students. Though outside the city, Crosby pays city taxes.

**Community Mainstay:** In both towns, Crosby has been an economic mainstay for the residents. In areas that were looked on as devastated because they had been stripped of the timber that had supported their only previous industry, Crosby has brought jobs and bustling business activity. The company is benefiting farmers and cattlemen by clearing their land of the stumps they couldn't afford to get rid of themselves. It not only pays the landowners for their stumps, but also pays taxes on their lands while it's dynamiting and bulldozing to yank out the tough, deep-rooted stumps.

As a family-owned corporation, Crosby management feels "very close to our employees, both Negro and white," Vice-President Thomas Crosby tells CW. "We have always had their welfare foremost in our minds, and every employee can get the ear of the chairman at any time. I don't believe desegregation would affect property values, but some of our white employees would resent having their children go to school with Negroes."

Desegregation, says Picayune City Manager A. J. Read, would "demoralize" the city. He adds that 43% of the townspeople are Negroes, paying about 15% of the city's taxes. Comments Principal John Johnson of the city's Negro schools: "The colored people feel the present facilities are excellent. I feel that if Negroes are actually given the right of adequate educational opportunities, separate schools will continue to be acceptable."

On the other hand, Negro leaders like Mississippi's T. R. M. Howard assert that "the Negroes of the South would strike down segregation with one mighty blow if they could." Howard, who served as spokesman for the Negroes summoned to the governor's conference in Jackson last summer, argues that there isn't enough money in the South to finance segregated schools that are equal and adequate. The sooner integration comes, he tells CW, the greater will be the gains in human resources and wealth.

It's clear that this controversy is moving into its crucial stages, with the people of Mississippi scheduled to vote later this month on a proposal to authorize ending the public school system. Having done more than its part to make the present system work, and having spoken up in defense of that system, Crosby Chemicals has become a prominent participant in one of the nation's most controversial issues.

## KEEPING CLAIMS DOWN

**Points in Olin Mathieson program to prevent excessive number of product liability claims:**

1. Adequate research, including thorough pretesting and continuous retesting.
2. Rigid production procedures and quality controls.
3. Adequate and accurate labeling and other representations as to safety and fitness of product.
4. Selection and testing of appropriate packaging.
5. Strict compliance with statutory controls.
6. Use of disclaimers.

## Double Defense on Claims Losses

Faced with the continuing trend—more and larger claims—in the product liability field (CW, Oct. 23, p. 20), industry is scurrying to find and put into practice more systematized, dependable plans to make its product liability losses fewer and smaller.

At the same time, industry is looking ahead to discover and prepare to shoulder new product liability risks that may arise because of future developments.

Those are the issues of the day for chemical companies' insurance managers, it was indicated at the recent fall insurance conference held in Chicago's Palmer House by the American Management Assn.

Example of how the chemical and pharmaceutical industries are coping with the challenge was the claims prevention program (*see table, above*) described by Robert Cone of Olin Mathieson's insurance department. This kind of program, Cone feels, is the company's first line of defense against product liability losses; insurance is the second. He recommends a combined product liability limit of at least \$1 million. Product liability coverage of most major chemical producers, he adds, is several times that amount. Excess insurance should be at least as broad as primary coverage.

**Tax Deductibility:** The one-day conference produced two tips on how the new U.S. internal revenue code—the one enacted last summer—may be a boon to industrial companies seeking to bolster their defenses against product liability losses:

- In outlining the high points in an over-all program to reduce total

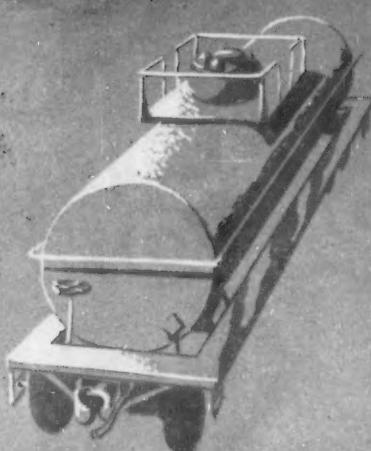
risk exposure, Cone observed that "use of deductibles in connection with product liability insurance coverage may well increase the interest of management in your loss prevention program."

• Observing that Section 462 of the new tax code permits an accrual basis (but not a cash basis) taxpayer to deduct additions to a reserve for certain estimated expenses, Assistant Treasurer Paul Reck of Sperry Gyroscope Co. counseled all insurance managers to "investigate the possible applications of these new provisions to all types of self-insurance reserves."

Warnings to be on guard for possibly mammoth risks in the future came from Boeing Airplane Co.'s Elwood Paris and from Stuart MacMackin, counsel to General Electric's Atomic Products Division. Paris surmised that "suppliers to the airframe manufacturer may have the same potential risks" involved in airplane accidents; and MacMackin foresaw that companies "contributing to our atomic progress" would need insurance protection for "possible catastrophe [of such magnitude] that liabilities could easily exceed the assets of any corporation found to be the legal cause of the mishap."

Even now, Cone cautions, an uninsured catastrophe loss could result in reduction in earnings per share, or impair funds for expansion. For conservation of corporate assets, he concludes, "all echelons of management must be concerned with the need for adequate limits and broad coverage against the exposure to substantial product liability."

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Liquid electrolytic caustic soda from Niagara Falls, N. Y., Henderson, Nev., Dominguez and Oakland, Cal.

Fused grades from Dominguez, Cal.

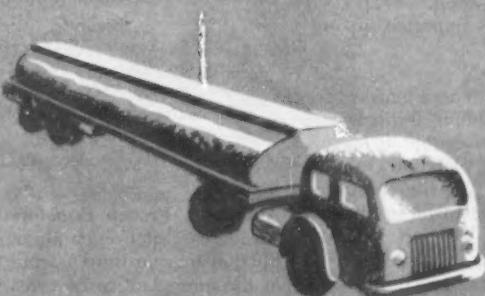
Rayon grade from Niagara Falls, N. Y.

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- LAURATES
- OLEATES
- RICINOLEATES

- 
- WETTING AGENTS
  - THICKENERS
  - PLASTICIZERS
  - EMULSIFIERS

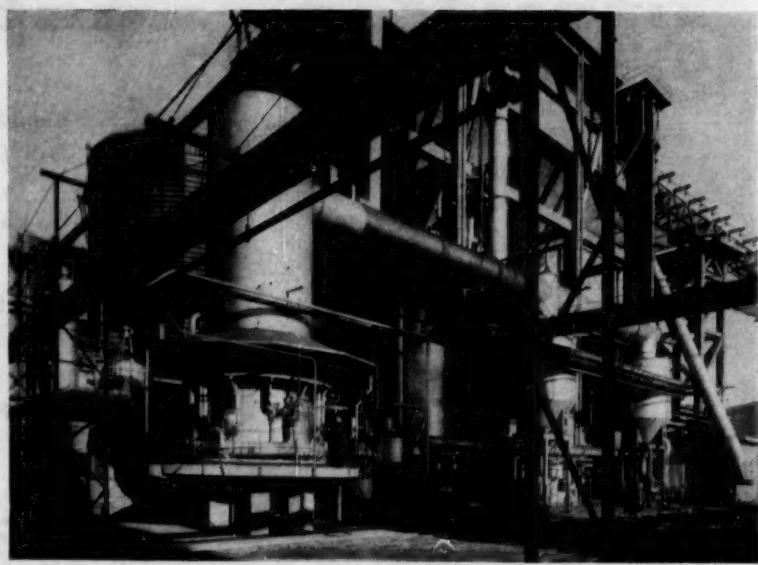
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## BUSINESS & INDUSTRY . . . . .



SAN GIUSEPPE DI CAIRO: Site of Montecatini's nitrogen fixation expansion.

### FOREIGN . . . . .

**Expansion/Montecatini:** For the first time since World War II, an Italian loan was floated in Switzerland last week. Terms: (approved by stockholders in Milan) give Montecatini \$11.6 million at 4.5% for 12 years. Ticketed (among other plants) for expansion: nitrogen fixation units at San Giuseppe di Carlo.

**Fertilizer/India:** India is expected to expand its nitrogenous fertilizer production by a further 250,000 tons/year by 1961. A special committee will coordinate the program.

Indian fertilizer consumption now stands at around 400,000 tons annually; domestic output is 260,000 tons. The balance is imported—mainly from the U.S.

**Fertilizer/Finland:** The Finnish government is also planning fertilizer expansion, proposes to double its output at the state-owned plant at Oulu to 32,000 tons/year. Reason: consumption of nitrogenous fertilizer in Finland has risen from 10,000 tons in 1946 to 30,700 in 1953, is expected to total over 40,000 tons this year. Result: imports of fertilizer are causing a heavy drain on the value of the mark.

The additional facilities, government officials say, will cost 2400 million marks, will take two years to build.

**Sulfuric Acid/Australia:** Production of sulfuric acid in Australia will be increased by 500 tons/day when three new plants, now under construction,

are completed in New South Wales, Victoria, and South Australia.

The new plant in Coghill Creek, near Newcastle, N.S.W., will cost £1 million, will have a 100-ton/day capacity.

That being built in South Australia will produce 300 tons/day, and will have (reportedly) one of the world's largest acid converters.

And Commonwealth Fertilizers and Chemical Developer's plant at Yarrawa (actually an extension of already-in-operation units) will boost total production to 30,000 tons of acid/year.

All plants will use pyrites from Queensland, N.S.W., South Australia, and Tasmania.

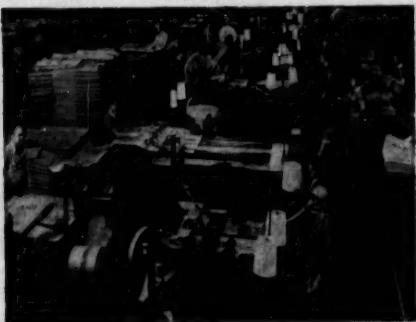
**German-Indian Cooperation:** A team of representatives of German chemical companies is expected to arrive in Karachi, Pakistan, sometime this week. Purpose: to negotiate final terms for a pharmaceutical plant to be built (with German technical aid) in the northwest-border province in Pakistan.

**Aluminum/French Equatorial Africa:** An increase of French aluminum production by one third is contemplated in the new plant to be constructed in the trust territory of the Cameroons in French Equatorial Africa. Pechiney, now responsible for 80% of French production, and Ugine (responsible for the other 20%) have organized Compagnie Camerounaise d'Aluminium Pechiney-Ugine. The company will be in production by 1957, will be producing some 45,000 tons/year of aluminum by 1959.

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Photo at right shows V-C engravers making printing plates. Well-designed, expertly printed bags have real sales appeal—put your product out front. Photo above shows one of V-C's multi-color printing presses.



A battery of sewing machines staffed by highly-trained operators and inspectors. Modern machinery, skilled operators, and diligent inspectors mean better-built, longer-lasting V-C Bags for your product.

**THE BAG** you use to package your product is only one of many items essential to your business success. But to the V-C Bag Division, the manufacture of better bags is a full-time job. That's why it will pay you to discuss your bag problems with a V-C representative. Possibly he can make suggestions that will improve or lower the cost of your packaging. Let him tell you about V-C's expert designing, printing, construction, and speedy service and delivery of V-C Multiwall Bags.



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**Here's How Chemical Companies Score Absenteeism Today**

- On the increase? 6%     On the decrease? 94%
- Have increased benefits resulted in more unjustified absences? Yes—47% No—53%
- Have unions cooperated in the drive to reduce absenteeism? Yes—50% No—50%
- Are you taking constructive measures to reduce absenteeism? Yes—87% No—13%

**Better—But Still Far to Go**

"The man who isn't there" is obviously still one of the big bugbears chemical companies face, even now that relatively settled business conditions prevail throughout the nation. Proving it again last week: personnel men, medical directors, insurance and employee plan supervisors met in Chicago, in a two-day "skull session" aimed at identifying, measuring, and controlling time off the job.

Although today's industrial climate has evidently helped to minimize the perennial problem of absenteeism (new jobs are scarce, overtime pay small), chemical management is obviously worried. Reason: it's an unpredictable, uncontrollable cost factor—and one that must be reduced all along the line in a round of toughening competition.

"We can't let absenteeism throw us for a loss," admitted one Chicago forum participant. "The annual dollar loss in production time wasted, in manpower dissipated, and in wages lost for time out without earnings is stupendous." Add to this the medical care cost when absence is due to illness and you have a heavy annual bill in the chemical industry.

**Situation Improved:** There's more than a glimmer of hope, however. Offers one chemical executive: "Several years ago, absenteeism in our plant was a terrific problem because workers could get jobs easily if they were fired for abusing job time-off. Then too, other workers who malingered could make up lost pay by working overtime. But these days, there's little opportunity for putting in much overtime. Result: workers are showing up for every possible hour, are keeping absentee rates at a low ebb."

One large West Coast chemical firm reports an absentee rate for the last

three years of: 2.6%, 2.4%, 2.2%. Another in the Southwest: 2.7%, 2.6%, 2.9%. While it's difficult to compare rates (not all companies agree on how they should be derived), there's still general accord now that absenteeism is on the decrease.

**Do Benefits Spawn Abuses?** The situation's far from perfect, though. There's some belief among personnel men now that increased sickness benefits to union workers are resulting in more abuses, greater absenteeism.

States one Southeastern chemical manufacturer: "Workers are prone to use the sickness excuse to account for lost time. It's relatively a simple matter to get medical certificates, to show that absence is 'legitimate'." Agrees a large East Coast manufacturer: "If we reduce or eliminate our seven-day waiting period (before sickness benefits start), then we're sure to be faced with an absentee problem." A third producer is bluntly matter of fact: "The situation is so bad it can't get much worse. Our benefits to union workers total 80% of normal straight time pay, and they aren't taxable to the worker. That makes it possible for a man in the 20% tax bracket to collect more than his usual take-home pay by staying home! Furthermore, the union isn't cooperating at all to ease the problem."

**Are Unions Cooperating?** The question of union cooperation isn't solidly "hands-off," however. While some unions feel absenteeism isn't their concern, others chide management for not being able to cope with the problem. One typical company reports bitterly: "Our union is quite passive, until there's an uproar over absenteeism. Then they place the responsibility for the situation on the plant manager."

A few unions get a "pat on the back" from management, however. They're conscientious in their ap-

proach, point out to workers that one man taking advantage of sickness benefits simply jeopardizes the program for all the fellows.

**Any Answers?** Since the chemical industry is now alerted to the importance of absenteeism, what measures is it taking to ease the burden? Such defensive steps as withholding pay, "checkup" home visits and medical certification, management agrees, just aren't effective enough. Instead, a new attitude is developing aimed at attacking the source of the problem—the worker himself. "We feel today," says one employee research director, "that absenteeism is effected more by such factors as relationship of the worker to his immediate supervisor, his feeling of job importance and responsibility, his work-group team spirit, and his chances of promotion. Most important is a worker's liking for the work he is doing." That's the new ground on which offensives to absenteeism will be launched; and that's the program chemical companies will go with.

**Taking a Stand**

The Navy is now moving full speed ahead on a plan to fluoridate water supplies at all its major bases. So said Capt. Frank M. Kyes, chief dental officer at the U.S. Naval Academy at Annapolis, in an address to the Louisville District Dental Society last week.

While chemicals haven't as yet been added to Academy water, a plan is under way to initiate fluoridation there "as rapidly as possible." Reason: midshipmen must leave Annapolis as "perfect dental machines."

Citing both local dental groups (which have estimated that fluoridation reduces decay over several years as much as 70%) and Navy experiments with dependents, Kyes maintains that the Navy is now solidly behind fluoridation. Preparing its guns for rebuttal: the Anti-Fluoridation League in Washington.

\*Research Council for Economic Security's workshop against absenteeism.



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## BUSINESS & INDUSTRY . . . . .



WIDE WORLD

EASTMAN'S HARGRAVE: From higher earnings, a big bonus for employees.

## LABOR . . . . .

**Workers' Dividends:** When Eastman Kodak and its chemical and textile-making branches totaled up their record nine-month earnings last month, the board of directors voted to continue the company's custom of splitting the melon among the employees as well as among the stockholders. As a result, the firm's approximately 53,000 employees in the U.S. will share a \$28.5 million dividend to be distributed next March on the basis of \$28.75 for each \$1000 earned in Eastman wages during the past five years—an average of about \$538 each. This will top the March '54 bonus, basis for which was \$27.75 for each \$1000.

**Nothing on Faith:** A labor union doesn't have to take the employer's word for it when he says that his company can't afford to meet the union's wage demands. That's the substance of the National Labor Relations Board's latest "prolabor" decision. Its effect: when an employer bases his wage bargaining position on his company's economic status, he must be ready to "open his books" to the union's bargaining committee—providing enough information to substantiate the firm's position. In arguing this case, the AFL Ironworkers said that it needed information about a certain company's financial standing and profits in order to make an intelligent decision on whether to press its wage demand. The board's decision was by unanimous vote.

**Membership Boost:** Biggest single gain in membership for any chemical labor

union this fall came late last month in an NLRB election at Waverly, O. The 1170 production and maintenance employees at the atomic energy plant there selected the United Gas, Coke & Chemical Workers (CIO) to represent them in collective bargaining with Goodyear Atomic Corp., which will operate the plant for the Atomic Energy Commission.

**Opposition Mounts:** Labor union opposition is building up in the case of Sen. Robert Upton (R., N.H.), who's been rumored to be the possible choice of President Eisenhower as a member of the NLRB to succeed Albert Beeson, whose term expires this month. CIO Secretary-Treasurer James Carey has launched an attack on Upton—who was defeated in his state's primary election last summer—on the basis of his voting record during his one year in the Senate. That record, Carey charges, shows Upton to be "a reactionary whose sympathies are with big business and management."

**'Little Taft-Hartley':** A statewide labor relations act is proposed in a bill to be submitted to the Kansas legislature in its coming session. The bill would set up a three-man state labor relations board to work for peaceful adjustment of labor-management controversies, define standards for fair labor practices.

## LEGAL . . . . .

**Freedom for Drugs:** New drugs now can look forward to being rewarded for "good behavior." Commissioner George Lerrick of the Food & Drug Administration has established a procedure of freeing prescription-only drugs for over-the-counter sales once they've been shown to be safe for use by laymen. Manufacturers or any other "interested person" may file a petition asking for declassification of any prescription drugs, and FDA then will publish a notice and invite written comments. After considering all data, the commissioner will put his decision into effect "as soon as practicable."

**Canadian Trademarks:** A lawsuit billed as one of concern to all U.S. companies doing business in Canada with goods bearing U.S. trademarks now is pending in U.S. District Court, New York. Vanity Fair Mills, Inc. (New York), charges that T. Eaton Co., Ltd. (Toronto), has been infringing the "Vanity Fair" trademark on certain women's apparel items; is asking an injunction against appropriation of that tradename plus treble



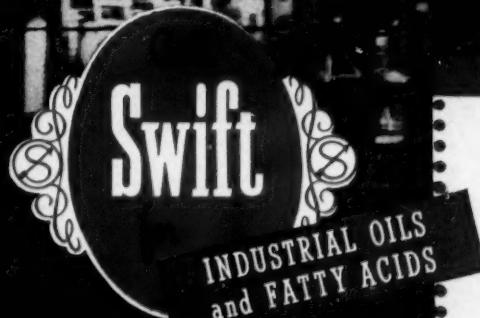
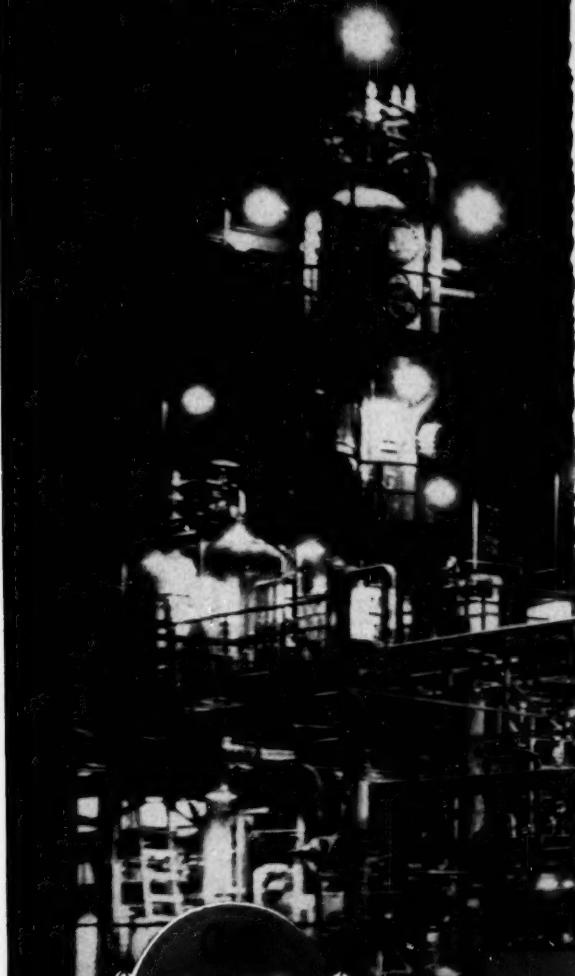
WIDE WORLD

FDA'S LARRICK: For "tried and true" drugs, an exit from sales ban.

damages. The trademark in question has been registered only in the U.S., not in Canada; but Vanity Fair contends that the International Convention for the Protection of Industrial Property—to which both Canada and the U.S. are parties—protects the interest of any U.S. national who has registered a trademark in the U.S. and "made it known" in Canada by offering the trademarked products for sale and advertising them in that country.

**Blast Not Covered:** In federal district court at Wilmington, Del., Judge Richard Rodney has ruled that a liability insurance policy held by Hercules Powder Co. did not cover a 1952 explosion at the Electro-Chemical Engineering & Mfg. Co. plant at Emmaus, Pa. (Whether Hercules is liable for any damages in that explosion is still at issue in another suit pending in U.S. District Court at Philadelphia.) Liberty Mutual Insurance Co.—which had issued the policy to Hercules back in 1945—argued that the policy was intended to protect Hercules only in accidents at its Allegheny Ballistics Laboratory at Pinto, W. Va., where Hercules was doing research work for the U.S. Navy. Hercules contended that the policy was supposed to cover all accidents stemming from its operations at Pinto. The explosion involved an aluminum tube that Hercules had used at Pinto to punch circular holes into a mass of molten explosive material. Later, the tube was washed and sent to Emmaus to be given a certain kind of coating. The explosion came while the tube was being baked to cure that coating.

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## Swapping \$/ton for ¢/lb.

Despite its recent leaning toward diversification and expansion, the fate of American Potash & Chemical Corp. still sinks or swims on the success of its Trona operations. Sales this year should top \$23 million; profits should run close to \$2.4 million—maybe over \$2.5 million. And, predicts Peter Colefax, hard-driving AP&CC president, 1955 sales should be even higher.

That, for a company that has just completed its second year as a publicly owned corporation, is no mean feat. But further rapid expansion won't be easy to achieve. Reason: the Trona operation is not susceptible to too great additional expansion because of the nature of the investment and raw material. American Potash has almost reached the point where further investment would provide only small incremental returns at Trona—one of the world's richest deposits of chemicals located in arid desert country some 175 miles northeast of Los Angeles. Now it's a question of "squeez-

ing more out of the operation and improving techniques."

**Plans and Prospects:** "We lived off the fat at Trona during World War II and Korea . . . but from now on diversification is a necessity," admits Colefax. "From now on, it's a question of recovery from tails to decrease the interdependence of our four big products (potash, soda ash, borax, and salt cake) as well as our over-all dependence on the market for them."\*

With that chiefly in mind, AP&CC inaugurated a separate process to produce soda ash and borax by carbonation from the lower-level brines in Searles Lake in 1948. (Lower brines contain less potash, more soda ash and borax.) But more recently developed was a system to spray brine (under pressure—from nozzles) out of the lake

\*The nature of the Trona process is such that in order to make either potash or borax, it's also necessary to make the other product; soda ash and salt cake are also coproduced. Unlike the mining processes of its chief potash and borax competitors, American Potash utilizes evaporation followed by fractional crystallization.

itself (see cut). It enables the company to build up deposits of Glauber's salt to be used as needed, substantially freeing production of salt cake from its dependence on production of the other products of the Trona process.

Most notable example of how American Potash is trying to upgrade basic materials is its production of lithium. Most notable potential for the future: organoboron compounds.

The possibility of growth by acquisition isn't being neglected, though. In 1952—shortly after Mathieson Chemical's bid for merger with American Potash fell through, and the company was able to free itself of absentee ownership for the first time—AP&CC merged with the \$800,000 Eston Chemicals Co. (Los Angeles). "It gave us," Colefax recollects, "our first chance to develop fine chemicals, and upgrade Trona products for direct consumer sale." Since merger, the trend has continued: the Eston Division has developed a series of new products (including herbicides, defoliants, and borate esters), has substantially expanded its output of chlorobromoethane. And Es-

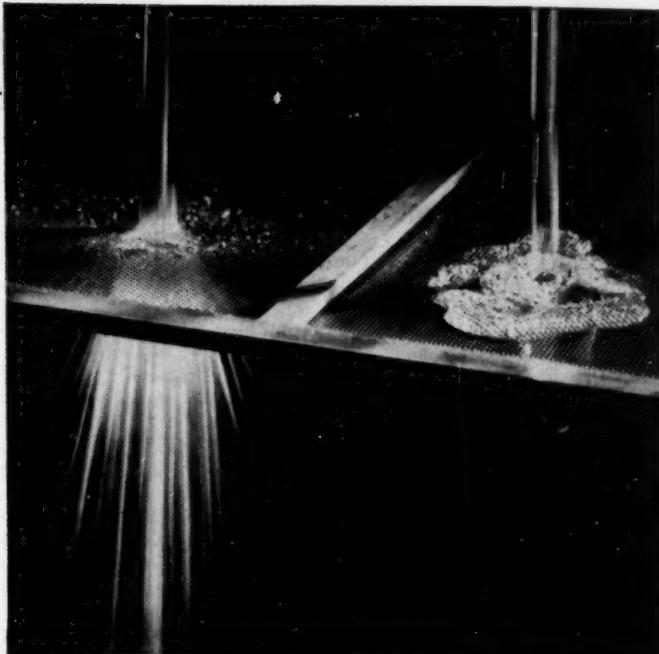


RAILROAD SPURS: Lead from Trona plant (left) to Searles Lake, source of company's raw materials.





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Illustrating the wide variety of viscosity types available in Methocel—(left) a barely viscous 2% aqueous solution of 15 cps, going through ordinary mesh screening; and (right) a 2% aqueous solution of 4000 cps., so thick it will hardly pour.

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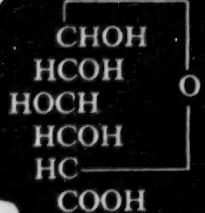


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**VALLEY WELLS:** Combined reservoir and desert playground for employees.

ton sales currently represent about 14% of the company's total dollar volume.

Research is being pushed, too. Early last year, American Potash opened a \$300,000 laboratory at Whittier, Calif., to augment activities at Trona and consider ventures into the organic field. Already out of the firm's laboratories have come Borotherm (a fire-resistant additive to water-based surface coatings), elemental boron, boron anhydrides and boron esters, (CW, Sept. 4, p. 62). And just this week: isopropyl borate—"a particularly interesting ester."

Logic behind the stress on the boron, lithium and bromine fields is immediately apparent. American Potash is applying itself to the fields in which it has available raw materials and a background of know-how in heavy chemical production. It's willing to go overseas if necessary—and if prospects look good. (Last October, arrangements were completed with Selection Trust Ltd., and the American Metal Co., Ltd. to develop lepidolite deposits at Bikita in Southern Rhodesia.)

Regarding the purchase last August of 40% (now 48.2%) of stock in the \$4.5-million Western Electrochemical Co., Henderson, Nev., Colefax is making no pretense of the fact that the company's out for full control—notwithstanding a recently established voting trust formed by Wecco's majority stockholders. "Wecco," says Colefax, "has basically the same customers as does American Potash; it's another good chance to broaden AP&CC's present production."

**Bow to Management:** Credit for much of the progress American Potash has made in recent months, its presi-

dent maintains, goes to the current staff of top executives. "Combining the best talent of the old timers (providing a continuity of management) with the best that could be found within the chemical industry, American Potash now feels it's ready to digest recent acquisitions and strike out anew."

Total company employment now stands at around 1800–1500 of whom live in and around the village of Trona. But despite 110° temperatures in the summer, Trona families don't consider themselves desert captives. Evidence: last July the company offered to sell its 336 family residences in the town. And within 6 weeks, every house was sold.

With such support, it's clear that American Potash is going places in a big way. Indicating its stockholders, at least, are convinced of it: the value of American Potash's common stock has almost doubled within the past year. Management is sure of it, too. States Colefax: "Since 1916, Trona has turned out more than 10 million tons of chemicals. Now we aim to drive it even higher by inching out more cents/lb. rather than dollars/ton products."

## KEY CHANGES . . .

**J. S. Leach**, to chairman of the board, The Texas Co., New York City.

**Clarence A. Weltman**, to executive vice-president and technical director, Alox Corp., Niagara Falls, N.Y.

**John R. Sargent**, to vice-president, sales, and **Sam E. Shelby**, vice-president, production, Federal Chemical Co., Louisville, Ky.

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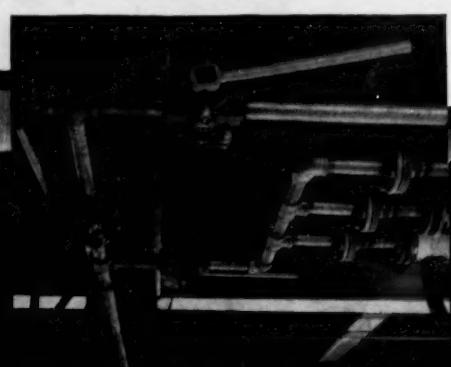
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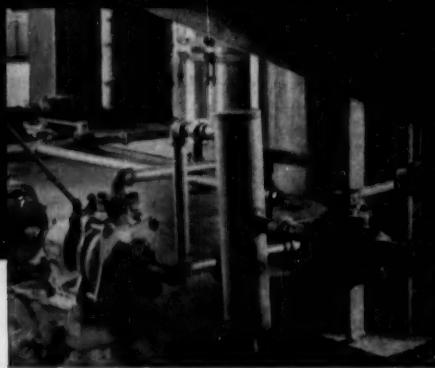
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Durco #3C Heat Exchangers (bottom of photo) handling nitrate solutions. (Bulletin M/2) \* Durco #4C Heat Exchangers (top) handling sulfuric acid. (Bulletin M/1)



Durco Type F Valves with Teflon sleeves handling nitrate solutions. (Bulletin V/4)



Series R Durcopump (Bulletin P/1) and Durco Type F Valves handling sulfuric acid.



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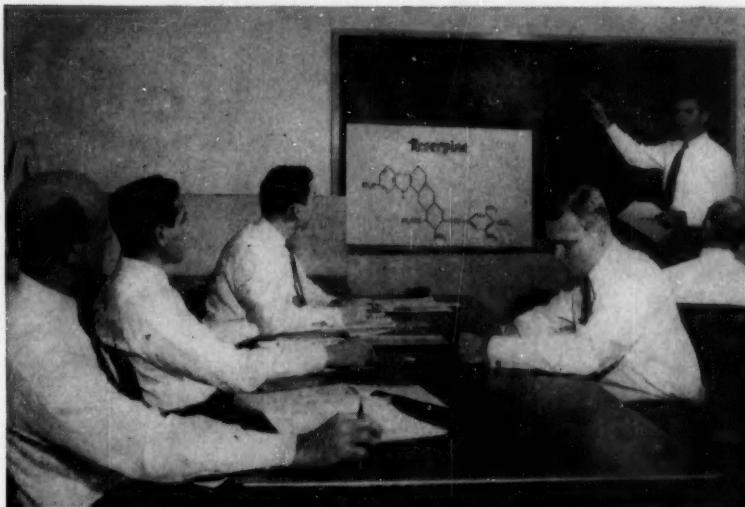
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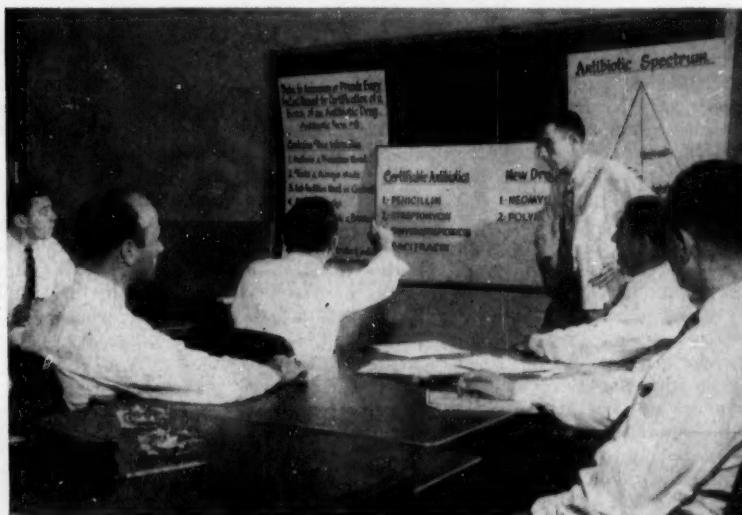


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# DISTRIBUTION . . .



**NEW:** Medicinal Chem. Dept. Mgr. George Mauer outlines uses of Reserpine.



**OLD:** Asst. Mgr. Langlois fields a fast antibiotics question. They're both part of course in . . .

## Sharpening the Salesmen

Although not every sales manager is willing to be pinned down on the extent of growing competition, it may be significant that right now most of them are reluctant to disclose their sales training programs. Last week, however, CW was privileged to make behind-the-scenes observations of a current training method.

The recently inaugurated Chas. Pfizer "sales refresher course" is tailored to fit the needs of its chemical sales division. Furthermore, every man in chemical sales, regardless of whether he has been representing

Pfizer for one year or 20, is required to attend this periodical "refresher."

Now reporting to Chemical Sales Manager Frank Black, this 40-man group accounted for about 30% of Pfizer's sales last year.

**Why Refresh?** Asst. Chemical Sales Manager Paul Weber, who has been in direct charge of this latest training, spots at least five reasons for the concentrated 10-day course:

- The growing number of customers' and prospects' questions referred to the home office.
- The continual pile-up of new

applications for established products.

- Ever-increasing complexities involved in many of the sales.
- A keener competitive selling picture.

• The need for sales management to evaluate members of the force more thoroughly and frequently.

According to Weber, many of the customers' questions, both semi- and nontechnical, should be answered directly by the salesman rather than forwarded to the home office. However, failure to know the answers isn't necessarily the salesman's fault. Big reason: he's used to dealing with non-technical people; but technical knowledgeability of purchasing agents and purchase-influencing personnel has increased in recent years.

**Too Many Applications:** In the past, Pfizer would cover new applications for established items at national and regional sales meetings. "But lately," points out Weber, "new uses are opening up so fast that it's impossible to let the information pile up for the less frequent, more general meetings."

To add to the salesman's difficulty in keeping abreast of new developments, many of the more promising applications occur in unfamiliar industries. As a result, the salesman may find himself trying to sell in a field with a jargon unfamiliar to him. Remedy? A concentrated briefing in the arts and language of the unfamiliar industry.

**More Rules:** Many of Pfizer's sales education problems stem from the increased complexity hedging the application. Example: sale of bulk antibiotics involves details of clinical data, antibacterial spectrum, relative effectiveness of dosage forms, stability, labeling requirements and governmental regulations.

Another instance of complexity: in the food industry, details of levels of addition as required by the standards of identity must be familiar ground to the would-be-effective salesman.

**More Competition:** Weber frankly admits that Pfizer's anticipation of keener competition has been a direct cause of the sales refresher course. In several directions, he believes, there is evidence of acceleration of selling pace. Some of these:

- More industrial advertising than ever before.
  - Greater distribution of direct mail pieces.
  - Augmented sales forces in many companies.
  - Stepped-up foreign competition.
- Assuming, therefore, that most companies' promotion efforts are of



Investigate the potential uses of Trona Anhydrous Boric Acid. This boric oxide flake of highest purity has many possible commercial applications, among them being in the manufacture of metallic borides for use in tools and dies, as well as in the making of ferro alloys for special steels. Consider, too, boron carbide, another derivative, for abrasives of extreme hardness. We'll be glad to send you an experimental sample of boric oxide flake and work with you in the development of this essential chemical.

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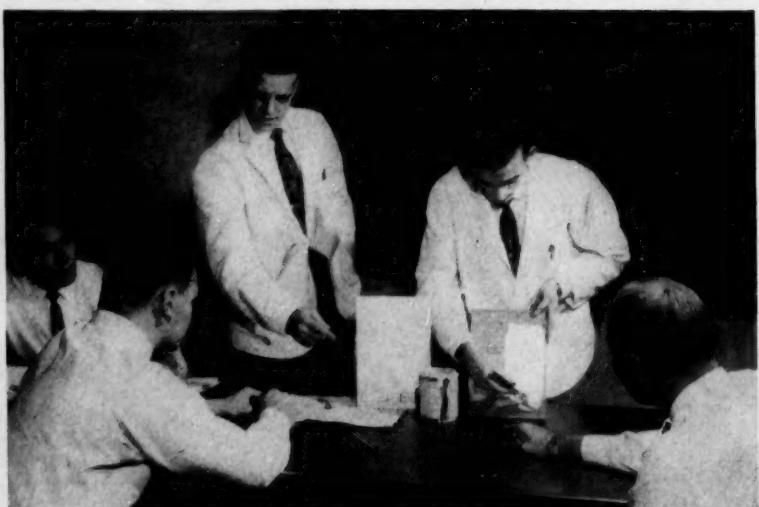
Sales Development Department

**American Potash  
& Chemical Corporation**

3030 WEST SIXTH STREET  
LOS ANGELES 54, CALIFORNIA



## DISTRIBUTION . . . . .



EXTENDING THE HORIZONS: John Shaw (pointing) and Walter Jewell (with brush) show use of sequestering agent in water emulsion paint—new sales field.

like nature, Pfizer is training to assure its share of the market by intensifying its product knowledge drilling. "We feel," Weber confides, "that the company that is going to get the business is the one whose salesman is alert and thoroughly familiar with his company's products."

On that basis, the refresher is pitched with these dual objectives:

- To give the salesman a thorough basic product knowledge.
- To school him in the best approach for a particular application in any given industry.

**By the Book:** Textbooks for the course, and nucleus for the sessions, are four newly streamlined chemical sales bulletin compilations. Weber is especially proud of these sales tools, the handiwork of the several industry managers.

Take a sheet of food and beverage department manager John McVeigh's compilation, for example. Condensed on a single page (see box, p. 46), it's a distillation of technical and sales bulletins on how, why and how much vitamin A (in this case) can be used by the dessert industry.

Prime value of these bulletins is that they are all pitched to aid the salesman to render direct, practical suggestions to a potential user, thereby implanting a feeling of confidence in his authoritativeness. Creating this impression is of prime importance. Avers Weber, "We want our customers and prospects to regard us as clearinghouse for application information."

**Running a Course:** For the salesman, preparation for the refresher begins some days prior to his coming

to the home office. Reason: on the first day at Pfizer's Brooklyn headquarters, he takes an extensive examination on the contents of all four sales books, regardless of his own immediate selling contacts.

Following this, he and his five to seven colleagues undergo a several-day series of lectures, demonstrations and quizzes. Conducted by key personnel in the headquarters sales group and technical service staff, the "skull sessions" will cover both "what to sell" and "how to sell it" phases.



ASST. SALES MGR. WEBER: His objective, razor-sharp salesmen.

# FIBRE DRUMS? STEEL SHIPPING CONTAINERS? STEEL EQUIPMENT CONTAINERS?

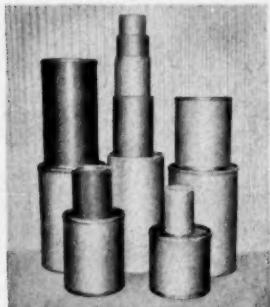
**RHEEM Announces a Complete Line of Fibre Drums to Provide an All-Inclusive Shipping Container Service**

To supplement its line of steel shipping and custom equipment containers, Rheem has added a complete line of Fibre and Fibre-Metal drums. These strong, light weight, inexpensive drums come in four types and in a wide variety of sizes.

### Choose the Drum that Fits Your Needs



Choose the type that best fits your needs — All-Fibre drums, or Fibre-Metal drums with steel bottoms with either slip or friction covers or with the new, easy to install and remove Rheem-Lox ring. Only Rheem offers all these types of low cost containers.



### Choose the Size that Fits Your Needs

Choose the size that best fits your needs. Fibre drums from 1- to 32-gallons in capacity; Fibre-Metal drums from 5- to 60-gallons. There is virtually a size for every possible requirement.

# RHEEM MANUFACTURING COMPANY

Chicago 29, Illinois      New Orleans 20, La.  
Houston 20, Texas      New York 22, New York  
Linden, New Jersey      Richmond 4, California  
Export Sales, 477 Madison Avenue, New York 22, New York

Foreign Affiliates and Associates: Argentina — Buenos Aires • Australia — Adelaide, Brisbane, Fremantle, Melbourne and Sydney • Brazil — Rio de Janeiro • Canada — Hamilton • Italy — Milan • Peru — Lima • Philippine Islands — Manila • Singapore • Spain — Madrid • United Kingdom — Bristol.

**NOW, More than ever before, You Can Rely On  
for all your shipping container requirements**



# GET THEM ALL... GET THEM FAST...

from

# RHEEM

### RHEEM STEEL CONTAINERS ARE MADE IN SEVEN STRATEGIC LOCATIONS



Rheem Fibre Drums are being manufactured in four of these plants. Production lines are scheduled for installation in other plants soon.



### "FAMILY" IDENTIFICATION

Rheem can furnish on Fibre drums the same type of decorative service it provides users of Rheemcote lithographed steel drums. Any design or trade mark can be reproduced on an all-over label for Fibre drums in any number of colors to provide "family" identification for your products.

**MAIL COUPON  
NOW!**

### RHEEM MANUFACTURING COMPANY (Mail to Nearest Sales Office, Listed at Left)

- We would like to have your packaging engineers come to our plant and study our shipping container problems.
- Please send additional information.

NAME OF COMPANY \_\_\_\_\_

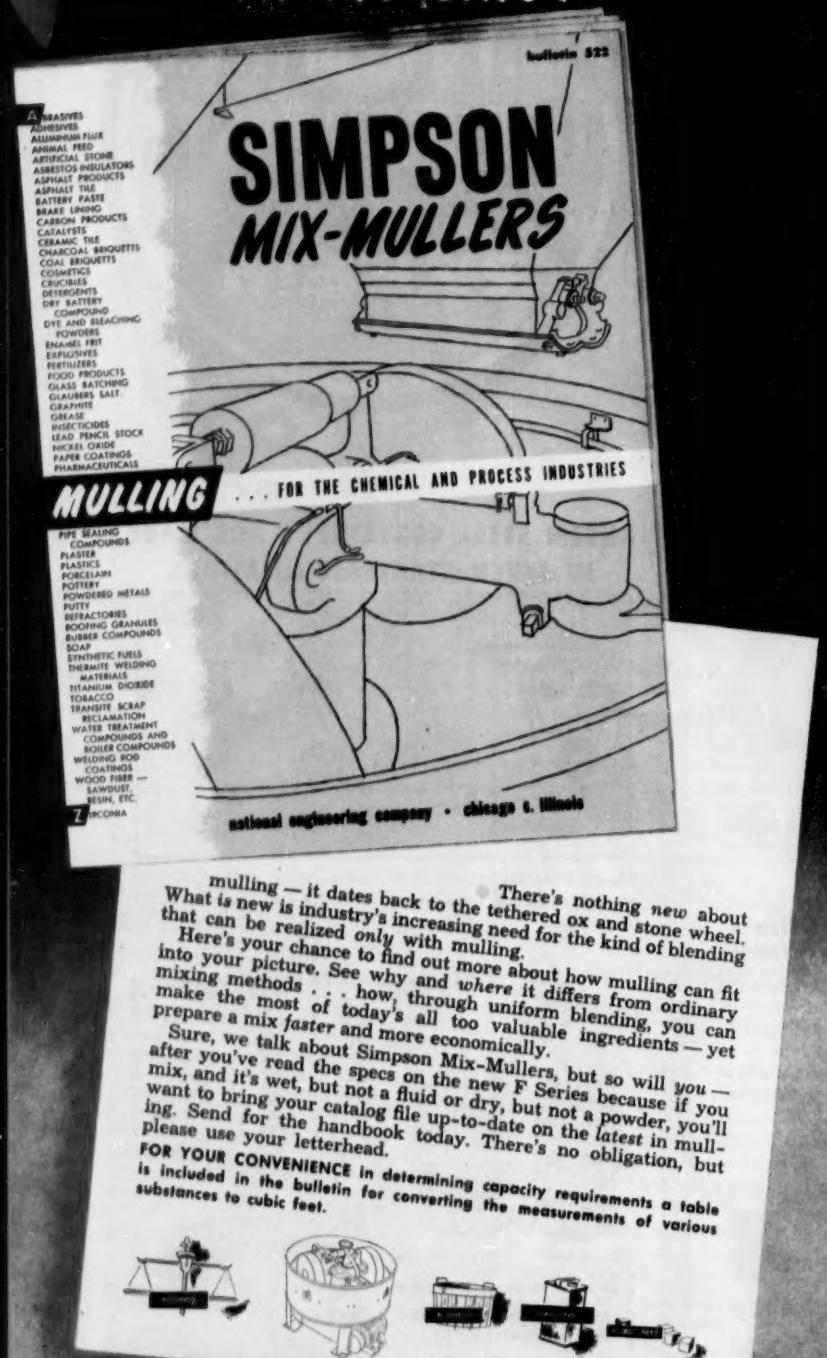
STREET \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

BY \_\_\_\_\_

If you're mixing one of these products  
... or any wetted or pasty solid material

# HERE'S YOUR HANDBOOK ON MULLING!

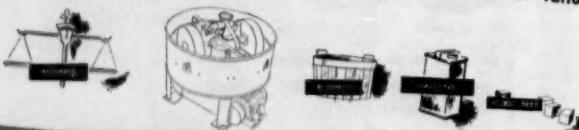


There's nothing new about mulling—it dates back to the tethered ox and stone wheel. What is new is industry's increasing need for the kind of blending that can be realized only with mulling.

Here's your chance to find out more about how mulling can fit into your picture. See why and where it differs from ordinary mixing methods . . . how, through uniform blending, you can make the most of today's all too valuable ingredients — yet prepare a mix faster and more economically.

Sure, we talk about Simpson Mix-Mullers, but so will you — after you've read the specs on the new F Series because if you mix, and it's wet, but not a fluid or dry, but not a powder, you'll want to bring your catalog file up-to-date on the latest in mulling. Send for the handbook today. There's no obligation, but please use your letterhead.

**FOR YOUR CONVENIENCE** in determining capacity requirements a table is included in the bulletin for converting the measurements of various substances to cubic feet.



**SIMPSON MIX-MULLER® DIVISION**

**NATIONAL ENGINEERING CO. (Not Inc.)**  
642 Machinery Hall Building  
Chicago 6, Illinois



## DISTRIBUTION.

With the emphasis always on down-to-earth sales helps, much discussion revolves around problems taken from the field reports, i.e., questions asked by customers or prospects, together with actual solutions worked out by the regional managers and/or headquarters staff.

The value of the small refresher group is especially evident during these give-and-take periods. Weber cites these advantages:

- Under the guidance of the industry managers, the salesman can absorb point-by-specific-point selling arguments for a definite application.
  - Many cross-fertilized questions arise from within the group. And because the number of participants is sharply restricted (in contrast with the national and regional gatherings) no one need return to his sales patch feeling his particular questions were slighted or unanswered.

**Ready to Run:** Besides the "schooling," the man:



## **Education for**

**INSTALLATION** of insulation, like most service jobs, has its pitfalls. The best way to avoid a botch—and an irate customer: make sure workmen know all the intricacies of methods and materials. Putting this principle to practice, Owens-Corning Fiber Corp. recently showed its Eastern contractors the details of cold storage chamber construction with its chemical insulators.

At a two-day stand in Baltimore.

- Receives a complete physical examination.
- Has his personal records updated.
- Gets an opportunity to visit on a personal basis with top brass.
- Renews acquaintanceships with production personnel.
- Tours Pfizer plants to observe the growth to which he is a party.

Although to a certain degree Pfizer management benefits directly from the sessions, Weber emphasizes that the entire program is aimed at one target: sharpening the salesman's tools for him.

"While it is true," he concedes, "that we get a chance to re-evaluate our men during the course of the quizzes, we are primarily interested in educating them to a razor-sharp edge."

And if competition keens in the chemical industry, as some are inclined to believe, then it would seem that highly honed salesmen would come in mighty handy.



## Insulation

company representatives demonstrated accepted techniques of cold storage insulating. Part of the agenda: asphalt priming paints, emulsions, vapor barrier paper and foils, hot erection asphalts, installation of asphalt-enclosed board against various surfaces; and the dry wall construction method.

Above, Kenneth Groshen (l), McCormick Asbestos Co. and A. W. Cox, manager of low-temperature insulation sales for O-C, pore over details.

## Investigate Plastoleins®

# DOZ DIOZ



**the most versatile low temperature plasticizers available!**

**Excellent Heat and Light Stability**

**Outstanding Low Temperature Flexibility**

**Low Water Extraction**

**Unusually Low Volatility**

**Extremely Low Soapy Water Extraction**

**High Plasticizing Efficiency**

Plastoleins 9058 DOZ (di-2-ethylhexyl azelate) and 9057 DIOZ (di-iso-octyl azelate) possess all the properties of a basic plasticizer and...in addition, impart very outstanding low-temperature flexibility.

This balanced combination of important properties has led to the extensive use of these quality plasticizers in all types of vinyl compounds including calendered and cast films, calendered sheeting, calendered and dispersion coated fabrics, and all types of extruded products.

Send in coupon today for new descriptive literature  
or write for samples of DOZ or DIOZ.



Fatty Acids & Derivatives  
Plastolein Plasticizers  
Twitchell Oils, Emulsifiers

Emery Industries, Inc.  
Dept. I-12 Carew Tower  
Cincinnati 2, Ohio  
Please send me copy of new  
Plasticizer booklet.

Name.....

Company.....

City..... State.....

Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio  
Export: 5035 RCA Bldg., New York 20, New York  
New York • Philadelphia • Lowell, Mass. • Chicago • San Francisco  
Warehouse stocks also in St. Louis, Buffalo, Baltimore and Los Angeles

**IT TAKES  
FOUR  
BIG  
MILLS\***  
**to supply A & S  
specification kraft!**

Bag-making at ARKELL & SMITHS is a coordinated operation! Bag-paper is supplied by more than 4 outstanding sources! A & S customers are, therefore, assured of these advantages:

- 1** 4-fold paper research by 4 outstanding laboratories—plus A & S's extensive testing at their own four plants!
- 2** 4-fold source of supply for Arkell & Smiths, assures uninterrupted, continuous deliveries to A & S customers!
- 3** 4-fold choice of new materials and manufacturing facilities to meet a particular customer's specifications.
- 4** ARKELL & SMITHS' four modern bag-making plants plus four dependable suppliers equal the best possible combination to deliver the goods, when and as you want them.

\*  
*Hollingsworth & Whitney Co.  
Mobile, Alabama Plant*  
*Crossett Paper Mills  
Crossett, Arkansas Plant*  
*Camp Manufacturing Co.  
Franklin, Virginia Plant*  
*West Virginia Pulp & Paper Co.  
Charleston, S. Carolina Plant*

ARKELL & SMITHS' customers buy the quality-control and outstanding service developed from close to a century of manufacturing experience.



**ARKELL and SMITHS**

*Bag Plants at:*

Canajoharie, N. Y. • Wellsville, W. Va.  
Mobile, Ala. • Hudson Falls, N. Y.

**DISTRIBUTION . . . . .**

**Firm Stand on Claims**

For some chemical makers, the easiest way out of a small claim is simply a modest payment—even in obvious cases of "shakedown." And while there's not much doubt this procedure has its talking points—especially for the insurance company—its advantages to the manufacturer are questionable.

Outlining his company's claim policy at the American Management's Assn.'s recent fall insurance confer-

ence (see p. 28), J. T. Parrett, insurance manager for the Carnation Co., laid down the case against "payment on demand." His objections:

- "The prompt practical settlement has the effect of tacitly admitting that the product is not always good. In many industries, control engineering precludes the possibilities of standard goods; result: few valid claims."

- "Liberal small-claim handling

**Page from Pfizer Textbook**

(story begins on page 41).

**BULLETIN FROM THE  
FOOD & BEVERAGE DEPARTMENT**  
**VOLUME SIX: DESSERT INDUSTRY**

**No. 2 Product Sheet (Vitamin A)**

<b>PRODUCT:</b>	Vitamin A Acetate or Palmitate (standardized potency of 20,000 U.S.P. units per gram in cottonseed or corn oils).
<b>APPLICATION:</b>	Fortification of vegetable fat frozen desserts (Mellorine).*
<b>ADDITION:</b>	Add vitamin A to dessert mix before homogenization. For specific data, refer to Technical Bulletin No. 64.
<b>LEVEL:</b>	Approximately the same level as is found in ice cream, or between 8 and 10,000 U.S.P. units per gallon of finished dessert.
<b>LEGAL STATUS:</b>	Manufacture and sale legal in Alabama, Arkansas, California, Illinois, Missouri, Montana, Nevada, Oklahoma, Oregon and Texas. Vitamin A fortification is mandatory in Arkansas and Alabama at a level of 16,800 U.S.P. units per gallon of "Mellorine Mix" and 3400 U.S.P. units per gallon of finished "Mellorine."
<b>STABILITY:</b>	The maximum loss during processing and storage for as long as nine weeks at 0 F is 9.2%. Refer to Technical Bulletin No. 64 for more complete stability data.
<b>ASSAY:</b>	The most satisfactory procedure is that of Hochberg M. J. Dairy Science 31, No. 4 (1948), which is a modification of the Carr-Price identity test outlined in U.S.P. XIV.
<b>REFERENCES:</b>	Technical Bulletin No. 64; "Vitamin A Fortification of Vegetable Fat Frozen Desserts." H. B. Conant and C. L. Wrenshall. <i>Ice Cream Trade Journal</i> —Sept. 1953.

\*"Mellorine" is here used as a generic term for all frozen fat vegetable desserts.

## FOR IMPROVED PRODUCT QUALITY

Alkylate with  
Atlantic Olefins

### Table of Olefin properties

Specific Gravity	Melting Point	Boiling Point
1.000	-100° F.	100° F.
1.002	-100° F.	102° F.
1.017	-100° F.	117° F.
1.019	-100° F.	119° F.
1.021	-100° F.	121° F.
1.046	-100° F.	146.1 F.
1.052	-100° F.	150.2 F.
1.057	-100° F.	151.9 F.
1.061	-100° F.	152.1 F.
1.066	-100° F.	154.6 F.

Monomer	Boiling Point
Ethylene	32.440° F.
Propylene	119° F.
Butene	279.0 F.
Isobutene	291.7 F.
Isoprene	282.8 F.
1,3-Pentadiene	283.5 F.
1,4-Pentadiene	289.4 F.
1,5-Pentadiene	296.6 F.

Want to improve the quality of alkylated phenols and other hydrocarbon derivatives? Use close-cut, highly refined Atlantic Olefins. These characteristics of Atlantic Olefins result in increased yields and high-quality finished products.

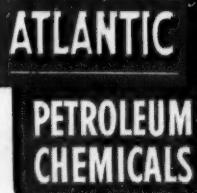
Atlantic Olefins are also used for the production of such chemicals as oil-soluble sulfonates, alkyl mercaptans, alcohols, and halogenated compounds. Their important properties have opened up large areas for improvement of both quality and economy in large-scale manufacture of rubber chemicals, varnish resins, germicides, insecticides, dyes and surface active agents.

Investigate the opportunities you'll find in Atlantic Olefins. Let us send you our technical bulletin that will give you complete details. Just send coupon or write.

#### SEND FOR THIS BULLETIN

THE ATLANTIC REFINING CO.  
Chemical Products Sales, Dept. H-12  
540 South Broad St., Philadelphia 1, Pa.  
Please send me information on Atlantic Olefins

Name \_\_\_\_\_  
Department \_\_\_\_\_  
Firm \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



Philadelphia, Providence, Charlotte, Chicago  
In the West: L. H. Butcher Co.

In Canada: Naugatuck Chemicals Division of Dominion Rubber Company, Ltd.  
In Europe: Atlantic Chemicals SAB, Antwerp, Belgium

## DISTRIBUTION . . .

(\$50-100 payments) doesn't make friends nor correct the situation; the claims actually produce more trouble than those cases where the line has been held. Example: fast claim service for a new product led to a public assumption that we were easy marks. On taking a firm stand, carefully investigating all claims, claims were substantially reduced."

Carnation's small-claim philosophy, too, stands against easy payment. "We think there is more to a complaint than merely disposing of it by paying out . . . You can't buy goodwill nor make an irate claimant into a good customer by merely giving him some money . . .

"Direct contact by a manufacturer's representative often makes it possible to settle more reasonably. Claimants incline toward increasing demands when they think the insurance company is paying. Customer relations are the proper function of the manufacturer and not his insurance company."

Taking this position—that minor claims can best be handled internally rather than through the insurer—the company's liability policies are written with a deductible amount, usually about \$500. This affords control or at least consultation on all claim settlements. And for Carnation, claims Parrett, that is the important thing, not any rate savings.

Further support for this view came from Sylvania Electric Products. Discussing determination of the "probable" hazard, Robert Gyory, manager of insurance, indicated Sylvania's preference for company processing of small claims over consumer items. Customer goodwill and avoidance of unfavorable publicity favor this policy.

Establishing claim validity is an integral part of processing. Olin Mathieson's Robert Cone disclosed that in his company the professional service department processes all technical complaints. Lot history, laboratory reports, sample analysis, and retained control units figure into the assessment. On this basis, an explanation is given or replacement made where necessary.

Most of OM's complaints are minor, not reported to the insurer. Under this agreement, unreported claims ballooning to formal proportions do not "prejudice" the policy.

According to Cone, the ultimate value a claim may reach can be accurately estimated. In serious situations (death, illness, property destruction) OM notifies both its own legal section and its insurer. Upon instruction from OM, the insurance firm launches its own investigation.

Recent years have brought more and more chemical companies to the

consumer marketplace. Plastics are one example, detergents another. But knowledge gained by others—by firms as far from chemicals as evaporated milk—should prove valuable in combating claims.

**"Caustic" Barging:** The ranks of insulated tank barges (see CW, Nov. 13, p. 60) carrying hot caustic soda swelled again last week when Diamond Alkali added its new craft, dubbed the "101." Insulation on the corrosion-resistant tanks prevents substantial heat loss during the 900-mile trip between Diamond's Fox, Ala., plant and Reichhold Chemical's Tuscaloosa operation. Hot, fluid shipment produces "substantial cost reductions in the loading, unloading and transportation," company spokesmen contend. Soon to be joined by a sister vessel, the "101" carried as an initial cargo 1700 tons of 50% caustic soda.

**Port of Indiana?** Anticipating the

opening of the St. Lawrence Seaway in 1959, Indiana's Legislative Advisory Commission has tentatively okayed development of a \$35-million port on Lake Michigan. It would be located at the Burns Ditch area, nine miles east of Gary.

Present plans allot \$10 million to a harbor breakwater and the balance to docks, warehouses and land. Mainline railroads and a new Indiana Turnpike would connect the harbor with the Central West. Economists believe such a center would increase markets for Indiana products and lure transport-conscious industry.

**Plastics Afloat:** Volume production of glass fiber-reinforced plastic boats is now under way at a shipyard in IJmuiden, Holland. According to its Dutch manufacturer, physical properties of the vessel compare favorably with those of wood. And, the plastic hull resists fouling, tropical pileworm.



### Mylar Show for Sales

BROWSING through Du Pont's traveling exhibit on Mylar polyester film in New York the other day were these representatives of interested industries. They came to view various displays of Mylar applications. Designed to illustrate ways polyester film may be used, and to help sell it, the exhibit included such layouts as:

- Applications to electrical goods

in insulation, laminates, and pressure-sensitive and magnetic recording tapes.

- Vapor barrier and thermal insulation uses.
- Decorative uses through lamination to table-tops, wall paneling, and acoustical tile.
- Technical exhibits showing potentials of the film's chemical, thermal, etc., properties.

**WHITER!**

**WHITER!**

**WHITER!**

**because REYNOLDS  
ALUMINA TRIHYDRATES  
are Organic Free**

Whiter than white . . . purer than pure! That's probably stretching the point. But leading alum producers have found the whiteness and purity of Reynolds Alumina Trihydrates enhances the quality of their product . . . and reduces manufacturing costs.

Available only from Reynolds, these premium chemicals sell for standard prices. They also eliminate bleaching, cut foaming and chlorate contamination, will not cause color streaking.

Reynolds Organic Free Alumina Trihydrates can help improve your products and reduce costs. For full details call your nearby Reynolds office listed under "Aluminum" in the classified telephone directory, or write Reynolds Metals Company, 2569 South Third St., Louisville 1, Ky.

Write for free brochure on "Reynolds Aluminum Chemicals" to the address above.

**Put Reynolds Consulting Service to Work for You**

Reynolds chemical and engineering specialists located near you will help save time, money and labor with aluminum chemicals, shipping containers and mill products. When further consultation is desired, there is a fully integrated technical staff at Reynolds headquarters.

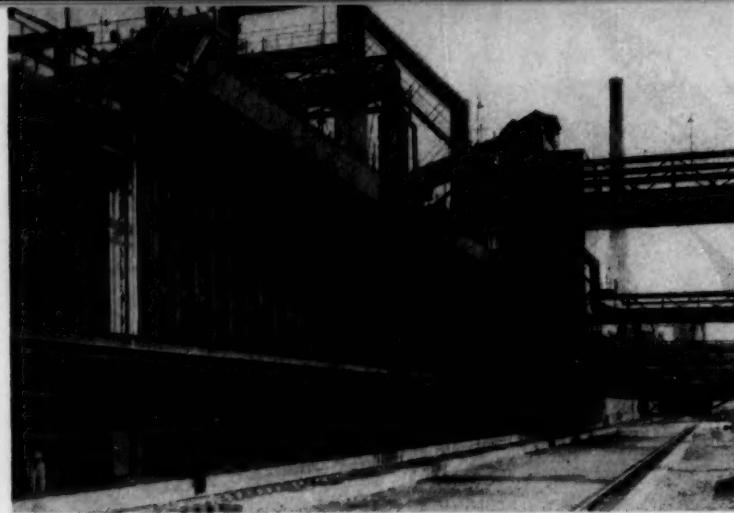


See "Mister Peepers",  
starring Wally Cox,  
Sundays on NBC-TV.

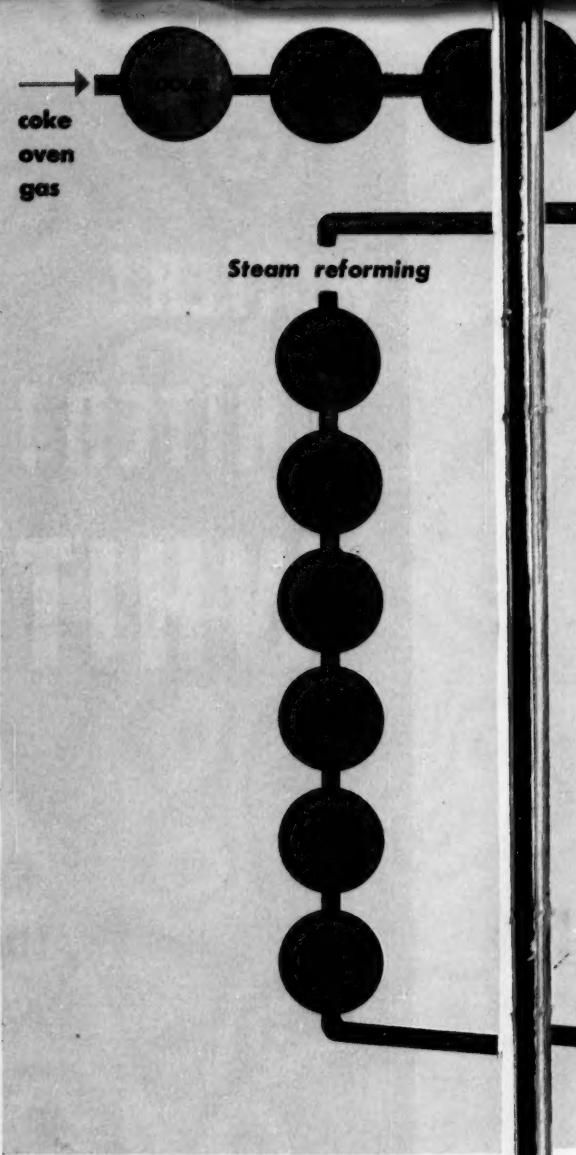
**REYNOLDS CHEMICALS**



FROM THE PRODUCERS OF REYNOLDS ALUMINUM



OVENS (above), which provide coke (below), are taking on a new significance as a source of hydrogen (right).



## Ammonia Operates from a New

Ammonia production is taking an unusual turn in the United States. Interest in the use of coke oven gas as a raw material source is on the rise; actual construction of two plants making ammonia from coke oven gas is slated to begin early next year. By 1956, these plants will be in operation, turning out at least 115,000 tons/year of ammonia.

If the interest continues and the initial operations pan out, the way will be opened to additional operations; for coke oven gas represents an untapped ammonia potential of 6 million tons/year. It's a big prize, and a number of firms are reaching for it.

**Triple Threat:** Actual interest centers on the preparation of the ammonia

synthesis gas ( $3\text{H}_2:\text{N}_2$ ), from there in, of course, it turns into a conventional ammonia operation. Starting with coke oven gas after all the valuable by-products have been removed, there are several ways of getting an ammonia synthesis gas. But three possible routes stand out (see above): low-temperature fractionation, partial oxidation, and steam-methane reforming. Each basic route comes complete with possible variations and modifications, must be tailored to a specific economic situation.

In common, the three processes aim at cleaving a hydrogen stream from the hydrogen-rich coke oven gas,\* com-

bining it with nitrogen. The choice route in Europe is low-temperature fractionation, and at this point, it looks as if it's winning out in the U.S. also.

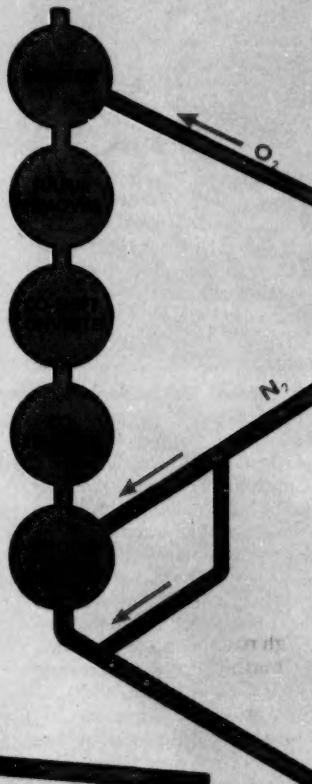
**Underpinned by Steel:** Work on Ketona Chemical's (offspring of Hercules Powder and Alabama By-Products) 45,000-ton/year plant (Ketona, Ala.) is scheduled to start shortly. Singmaster & Breyer will design the plant (the prime contract is held by Fluor); L'Air Liquide will supply the low-temperature apparatus.

Coke oven gas will come from nearby Alabama By-Product ovens, pass through purification steps that will remove contaminants like sulfur, at the same time recover tars and other valuable by-products. Hydrocarbon frac-

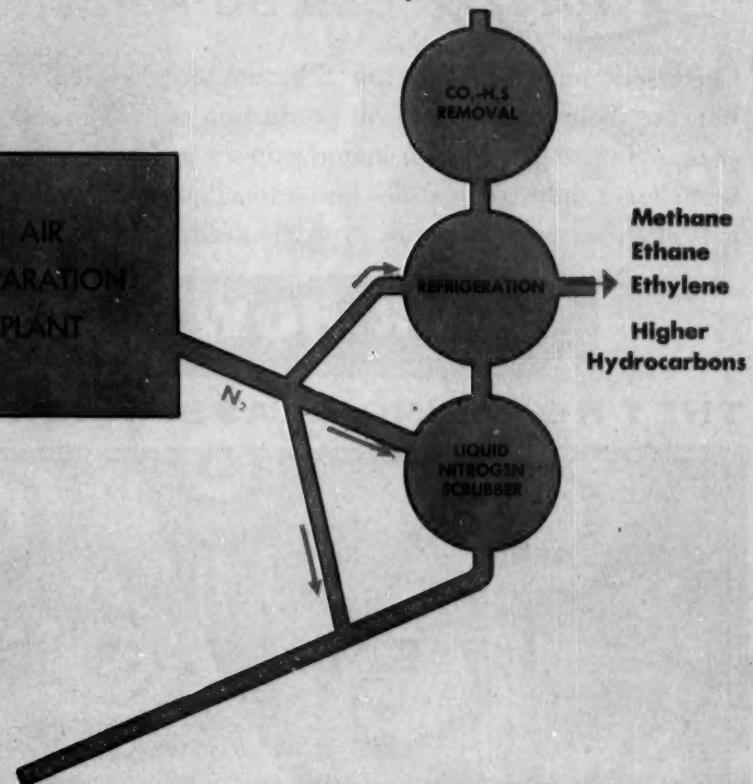
\* A representative sample runs about 50% hydrogen.

## Triple play on coke oven gas...

**Partial oxidation**



**Low temperature fractionation**



**ammonia synthesis gas ( $3\text{H}_2 : 1\text{N}_2$ )**

## Base

tions will be condensed out by cooling; washing with liquid nitrogen will scrub out tail-end impurities and by-products to leave a high-purity hydrogen-nitrogen stream that will be brought up to strength ( $3\text{H}_2 : 1\text{N}_2$ ) through the addition of more nitrogen. It will then be converted into ammonia.

An older version of the L'Air Liquide setup, a not-too-distant relative of the Ketona works, has been in operation at Du Pont's Belle, W. Va., plant since 1930. There the company diverts some of the gas stream from its coke ovens through low-temperature equipment to produce a relatively pure and concentrated hydrogen stream. But the Belle works is basically an ammonia-

from-coke water-gas operation, and Du Pont uses the hydrogen stream principally for the hydrogenation of other products, only occasionally to beef up the hydrogen in its water-gas operation.

But most coke ovens are, of course, captive, and it will remain for steel companies to take advantage of this potential bounty. U.S. Steel, already committed, will spend \$18 million on a 70,000 tons/year ammonia plant to adjoin its Geneva, Utah, works.

Although no general contractor has been named, Blaw-Knox recently completed an engineering design study for the unit. And while U.S. Steel emphasizes the fact that it has not committed itself to any process as yet, it's an odds-on bet that Blaw-Knox predicated its design work on Linde low-temperature equipment. Another good bet: the

company will follow up the Utah plant with a similar one at its Gary, Ind., works.

**Queuing Up:** Naturally enough, a number of other firms are interested in coke oven gas—either from the standpoint of construction or operation. Among them:

- From the low-temperature equipment angle, such companies as Messer, Linde Air Products and Air Products are watching the development closely.

- Construction firms that have had experience with any ammonia plants are also interested. And companies such as Chemical Construction and Uhde, which have built coke oven gas ammonia plants in Europe before, are very much concerned.

Returning from Europe this month, a select team from U.S. Steel has been

## LOOK WHAT

# Linde

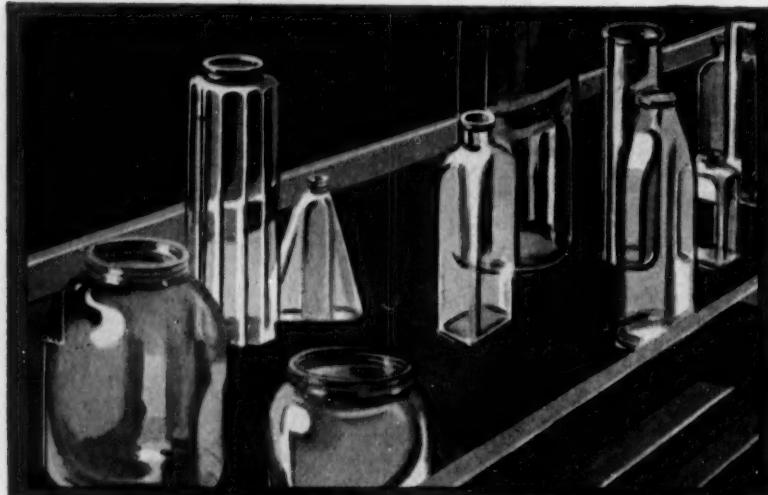
Trade-Mark

## SILICONES CAN DO FOR YOU

Customers report that LINDE Silicones are helping them improve their products and cut production costs. The experience of LINDE people with manufacturers in many different branches of industry qualifies LINDE to adapt these new products of chemistry to your own specific needs.

## LOOK HOW

### THEY'RE AIDING GLASSMAKERS



Bottles and pressed ware are produced sparkling clean, breakage and rejects are reduced, with the aid of LINDE Silicones. Sprayed on shear

blades, chutes, and molds, the silicones increase efficiency, reduce soot and smoke. It's another example of why you, too, should . . .

## LOOK TO LINDE

### FOR SILICONES

*Linde*

AIR PRODUCTS COMPANY

A DIVISION OF  
**UNION CARBIDE**  
AND CARBON CORPORATION

30 East 42nd Street  New York 17, N. Y.

In Canada: Dominion Oxygen Company, Division of UNION CARBIDE CANADA LIMITED

## PRODUCTION . . .

closely eyeing foreign operations for the past 30 days. Experience, of course, will count heavily in both the construction and the operation end of the venture.

• Nor (from the operating angle) has this development failed to pique the interest of coal-chemical companies like Pittsburgh Coke & Chemical and Koppers, who have their own coke ovens. With the former, this interest is "largely academic" at the present time.

Koppers, however, is more serious, is ready to build such plants—for anyone that's interested. It can, says the firm, design and construct the works, sell a plant complete with requisite ovens, low-temperature units and all. But the firm is also interested in operating a plant. It might well become its own first customer.

**Fielder's Choice:** Other steel companies, it follows, are also a natural for this type of operation, and, in fact, a number of them have already shown interest. Captive coke ovens, while a decisive factor, are not, however, the only important consideration.

Any ammonia operation, for instance, is a major undertaking that requires a heavy capital investment. And while the product is among the top in chemicals showing a high return on the invested dollar, it is not an easy field for small firms to crack.

Many steel firms, of course, are already in the chemical business by nature of their coke oven production. The addition of an ammonia plant provides a direct means of expansion, along with a close control of reinvestment capital.

Another reason for their interest is expediency. Some steel companies have found that use of straight oxygen instead of air in their operations results in a superior type of steel; and since low-temperature equipment is required for the oxygen, a company in that position already has three of the main prerequisites for an ammonia plant based on coke oven gas—hydrogen from the by-product gas stream, nitrogen and a cooling effect from the low-temperature apparatus.

The natural gas factor also enters the economic picture. For rising transmission costs are boosting the delivered cost of gas. In some instances, the competitive position of natural gas has been handicapped to a point where it is necessary to give heretofore-higher-priced coal serious consideration as a raw material source of ammonia.

On the other hand, in certain areas where utility companies buy coke oven gas output to sell to consumers, natural gas has come in and repeatedly under-

# Make UNITED STATES STEEL your source of supply

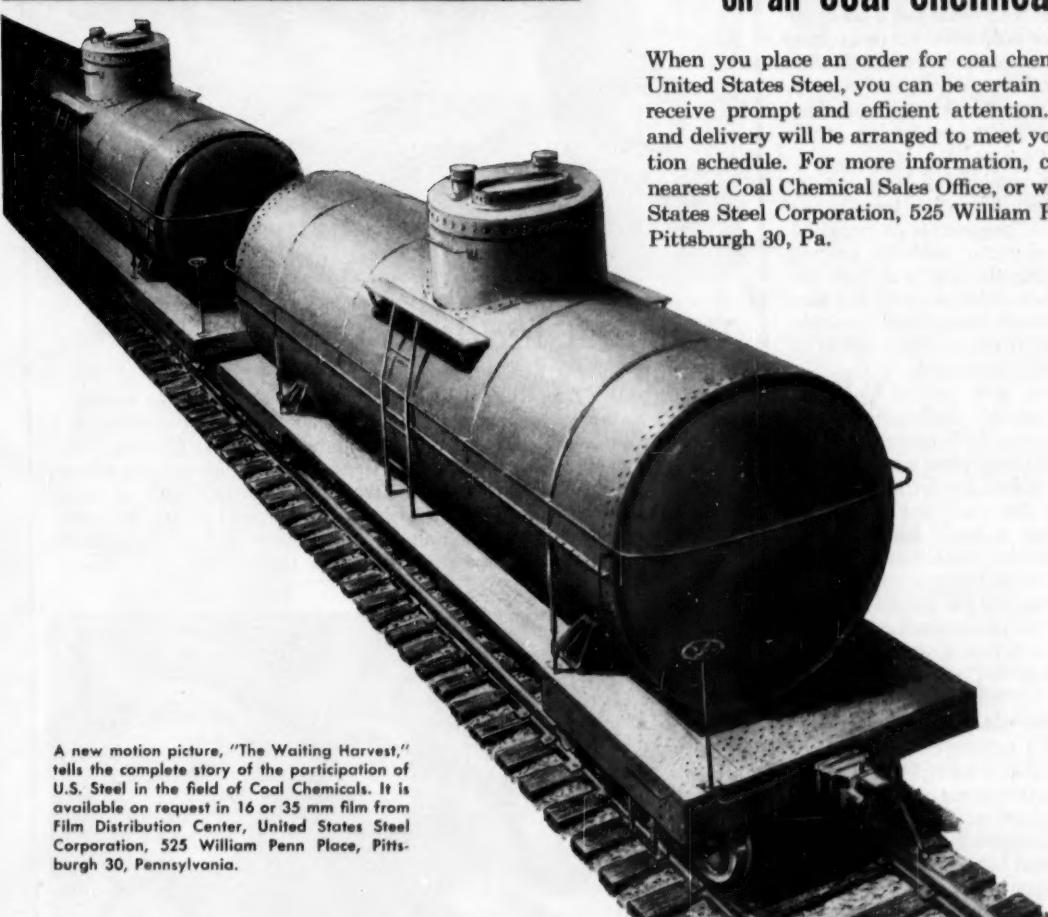
for all these

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A new motion picture, "The Waiting Harvest," tells the complete story of the participation of U.S. Steel in the field of Coal Chemicals. It is available on request in 16 or 35 mm film from Film Distribution Center, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

## USS Coal Chemicals



4-471

UNITED STATES STEEL

## PRODUCTION . . . . .

cut coke oven gas, left coke oven people with a surfeit. Using this surfeit to make ammonia would free these firms of a dependency on utilities, tie in surplus disposal with operational schedules.

Companies that have coke ovens but not steel mills don't require much of the residual gas for heating purposes and therefore feel the competition from natural gas more strongly. In any case, the companies involved can have their cake and eat part of it too. For by using the low-temperature fractionation, it's possible to strip the gas of its hydrogen content and still have a gas high enough in Btu.'s to be sold as fuel.

**Many Means:** Sale of hydrogen-stripped gas is only one of many possible directions this venture can take, however. Having decided to make ammonia from coke oven gas, a company can count on only a few pat procedures centering on preliminary purification and by-product recovery. After that, it must make several significant decisions concerning processing techniques. For example:

- While much of the current interest has focused on low-temperature fractionation, proponents of steam reforming and partial oxidation are vocally plugging the merits of both for the job. They point out that if a firm hopes to obtain maximum ammonia output from its raw material, either of these routes is preferable to fractionation because both convert hydrocarbons into usable hydrogen, which adds to the main hydrogen stream.\*

It follows, though that such a course leaves no residual gas for sale or captive use. It also voids any possibility of recovering a small but valuable ethylene fraction that can be condensed out in the low-temperature operation. Because of the relatively small volume of ethylene available, some production men feel, it would be difficult to justify the additional capital investment needed for production of a salable ethylene stream.

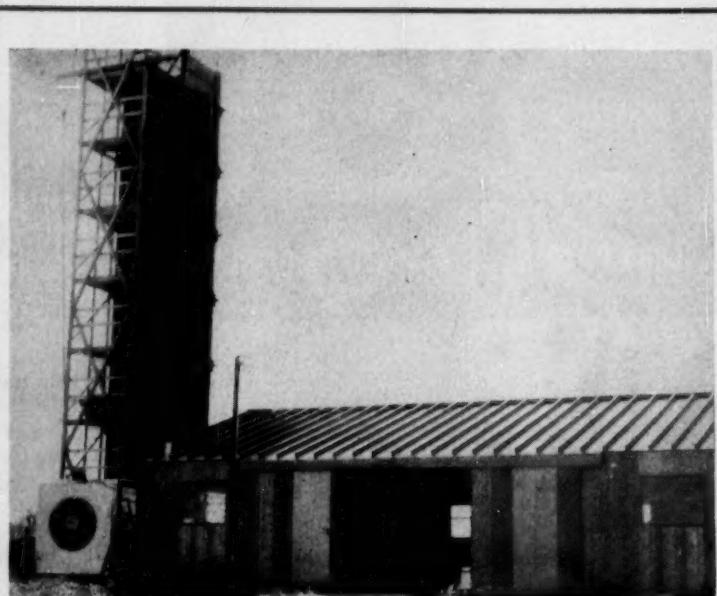
- Too, if a middle course is called for, it is possible to incorporate a small partial oxidation setup in a low-temperature operation. Because of the capital costs involved, this move looms less likely than some alternates.

If a company can't find any outlet for residual gas—or doesn't choose to sell it—it can be used to drive compressors in the low temperature unit. This, of course, doesn't concern the initial 25-40% of the coke oven gas that is used by the producers to heat their own coke ovens.

\* In addition to the hydrogen formed from the steam required for each process.

- And, naturally, there are the numerous variations of each contractor in the matter of process refinements or "tricks of the trade": the choice of high-pressure or low-pressure operation, the selection of amine, ammonia

or water for removal of hydrogen sulfide and carbon dioxide. The routes depicted are merely three feasible ways to ammonia from coke oven gas. They don't exhaust the possibilities by any means.



## Weather Made to Order

INDEPENDENT of the seasonal whims of Nature, engineers at J. F. Pritchard & Co. (Independence, Mo.) create their own summer weather the year around in a novel cooling tower laboratory (*above*). Even in winter, decking materials and structural design can be stud-

ied under heat loads in excess of 10 million Btu./hour at 80 F. wet bulb temperatures. Electronic devices control inlet air conditions, record check point data with which engineers, like Charles Springstube (*below*), hope to evolve the magic formula for cooling tower design.



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*Write for BUYERS GUIDE listing sources of supply for "stock" materials; finished products; and corrosion-proofing services.*

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## PRODUCTION . . . . .



BLAINE PILOT: More variety provides a stiffer test for waste . . .

## Reduction by Oxidation

To aid in its all-out campaign against stream pollution, the chemical process industries are enlisting a variety of methods to get rid of their wastes. One of the latest recruits—biological oxidation treatment—is currently being tested by Carbide and Carbon Chemicals Co. at its Blaine Island (Charleston, W.Va.) plant.

Waste disposal by biological oxidation is an old idea, of course. It's been used for years as a basis for disposing of organic wastes in many municipal sewage disposal systems. And more recently, it's been finding favor among refiners. Never before, however, has it been put through as exacting a test as at the Carbide pilot plant. Here's why:

At its Charleston plant, Carbide turns out a large volume of a wide variety of chemicals. Aldehydes, esters, alcohols and ketones are merely a few representative types among the more than 300 chemicals made there. And most of them show up, in trace quantities at least, in the Blaine Island pilot plant.

Working around the clock since it went onstream last July, the Blaine Island plant is presently handling only 0.2% of the total waste output. Within the year, however, Carbide engineers hope to learn enough from this 500-gal./hour operation to enable them to design an efficient full scale plant to treat 4000 gal./minute.

Before these wastes could be treated effectively, it was necessary to collect them at a central spot. Special waste sewers were constructed to separate the organics, which formerly flowed into main sewers, where they became diluted with storm water and millions of gallons of cooling water. Since last year, Carbide has spent \$344,000 on the collection system; and three more systems are scheduled for completion by the summer of 1956.

Carbide isn't depending entirely on the biological treatment plant to solve the pollution problem. Design changes and process alterations are also being employed to cut down pollutants at the source. And special procedures to avoid spillage and needless discharge of chemicals are receiving careful attention.

As one of the largest industries in the Kanawha River Valley, Carbide holds a key position in the area's pollution abatement program. And though its current effort won't pay off in full for some time, it's setting a good example for some of its smaller neighbors to follow.

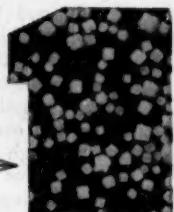
Economically, however, interest centers around the degree of success Carbide will meet with its biological oxidation approach. For industry's consensus is that if it works well on Carbide's varied wastes, it will work anywhere.

# 3 Exclusive Advantages

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# SPECIALTIES . . .



SELF-SERVICE: Package design may influence her choice of household chemicals.

## Give Chains a Chance

Take a look at the \$20-billion business that chain stores do. They're big outlets for chemical specialties.

Drug chains offer the warmest welcome to novel specialties, but currently food supermarkets sell a bigger volume—nonfoods total nearly 10% of gross.

Adaptable, ready to merchandise anything that will sell, chains nonetheless demand cooperation of firms working with them.

Are you getting your share of the chain store market? It's a question every chemical specialties maker should be asking himself—for a number of reasons. For one thing, chains (food, drug, variety stores) move more than \$20-billion worth of goods annually. For another, chains are eager for new products—buyers for grocery supermarkets, for example, are looking for items that offer higher margins than those on foods.

But for makers of consumer chemical products, drug stores are the easiest to approach now, because drug stores urgently need money-makers—drug store profits dropped last year to the lowest level since mid-depression days of 1935, and they aren't expected to be any better this year. (This was a major complaint at the Hollywood, Fla., meeting of the National Wholesale Druggists Assn. two weeks ago.)

**Switch Or Else:** The general opinion is that to survive, retail drug stores must switch to self-service. That's one of the secrets of the phenomenal

growth of food supermarkets since World War II, and it can be turned to profit by the specialties maker.

But one doesn't grasp the real meaning of supermarkets (foodstores with annual sales over \$375,000) without looking at some facts. According to the latest survey of the *Progressive Grocer*, there are approximately 19,000 supermarkets in the U.S. today. Though their number is small when compared with the total of grocery stores—over 400,000—they controlled 48% of last year's sales and will probably control more this year.

Last year they moved some \$16-billion worth of goods. Of that amount, chain-owned supermarkets took over \$10-billion, the rest going to independents (they have from one to 10 units, chains 11 or more).

**Ten Percent Nonfoods:** Until consumers stop moving to the suburbs, buying automobiles and demanding convenience, there will be more and more supermarkets. But because so many supermarkets have been built,

competition between them is increasing. And because it does most of its business on the lowest over-all margin in retailing—food—the supermarket has made a practice in recent years of adding nonfoods to its shelves. One source estimates that 7-10% of all supermarket business now is in nonfood lines—everything from floor waxes to shoe polishes.

Already food stores sell \$510 million worth of health and beauty aids. That's around 40% of national sales for such products. Specifically, manufacturers of toothpaste and shampoos currently sell over half of their total volume through such channels.

These figures don't mean all the sales are in supermarkets but that's where the greater part of the sales is made. Besides giving drug stores something to worry about, these sales should serve as an incentive for a specialty maker to reconsider his attitude toward chain selling, if he hasn't done so recently.

**Chain Picture:** CW has looked into the over-all chain picture, has uncovered some information pertinent to producers of chemical specialties, turned up ways to help them make the most of their opportunities:

Never before have the three major chain groups (drug, food, variety) been so inclined to accept new products. They were able to gross more than \$20-billion in 1953 because they are "the most adaptable and changing outlets in American retailing. They are no longer interested in restricting themselves to straight food, or drug, or notions lines," CW was told last week. "Enter a shopping center today and note the similarities—not just in merchandise, but also in display. Their shelves are open to any product that will add volume."\*

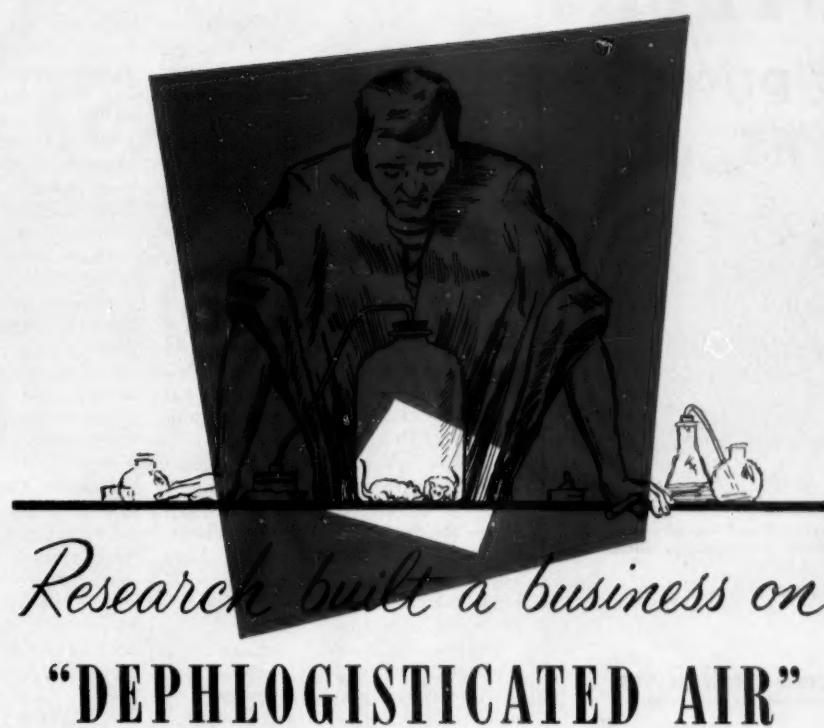
While all chains are approachable, their policies vary. This is the breakdown with their individual idiosyncrasies:

- Food chains are usually unwilling to take on a product until it has proved its market acceptance elsewhere. A characteristic of food chains is that they do a lot of buying through regional offices, rather than through a central headquarters.

- Variety chains tend to ask: Have any of our competitors bought the product? As a general rule, the smaller variety chains don't accept anything

\* The leaders: drug—Peoples, Rexall, Walgreen; food—American, Food Fair, Grand Union, Great A&P Tea, Jewel Tea, Kroger, National Tea, Safeway; variety—Grant, Green, Kresge, Kress, McCrory, McLellan, Murphy, Newberry, Penney, Woolworth.

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Priestley first observed the phenomenon of oxygen . . . Lavoisier gave it its 18th century name. And Becco research built a business on active oxygen. It's a shining example of the basic FMC policy of "putting ideas to work through chemistry".

In very many respects our Buffalo Electro-Chemical Company Division is newsworthy:

*Item: Becco has more men engaged in research than in production.*

*Item: Becco research developed one of the outstanding hydrogen peroxide processes . . . produced the first commercial 90% hydrogen peroxide . . . and the first commercial peracetic acid.*

*Item: Becco developed epoxidation proc-*

*esses, now offers a number of processes using peroxygen chemicals.*

*Item: 30% of Becco output now goes into applications that didn't exist commercially a decade ago.*

Just as Becco occupies a unique position in its field, other FMC Chemical Divisions are similarly important producers of heavy chemicals, organic chemicals, insecticides, fungicides and other specialized chemicals. Operating autonomously under the overall policy guidance of a single administrative staff, the five FMC Chemical Divisions have achieved a remarkable record of growth, diversification and efficiency in every phase of their activities. If you use the chemicals listed below, we can serve you promptly and well.



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## SPECIALTIES . . .

unless the larger ones have bitten. Chains of this nature buy through both main and regional offices. Most have their headquarters in New York.

- Drug chains, fighting to hold their own against virtually static sales, are wide open for what the trade calls "hot" items. They maintain three buying organizations: Affiliated Drug Stores, Associated Drug Stores (no cross membership between the two) and Chasco.

Affiliated—regarded as the livelier of the first two—often buys samples of a new item for its 40 major buyers. In addition to actual purchasing, it makes recommendations that are important in drug circles. Its headquarters, and Associated Drug's, is in New York.

Chasco, which is located in New York, buys for the four chains operated by Rexall (Lane-Liggett-Rexall in the South, Owl on the West Coast, Renfro in Birmingham, Liggett in New York), and thousands of other Rexall-Liggett franchises as well as many stores not associated with Rexall.

Chain-manufacturer relationships are more than those of supplier and distributor. Just getting a product accepted is not enough. In the case of all three chain groups, the manufacturer must be prepared to cooperate actively. He has to gear his production program to their merchandising plans, which are often drawn up six months to a year in advance.

**More than a Product:** Besides demanding a salable product, the chain buyer expects the manufacturer to present:

- Fresh merchandising ideas.
- Tie-ins.
- Promotional allowance plans.
- New point-of-sale material.

Clever packaging to supplement the manufacturer's consumer advertising is also essential. This goes beyond a package designed to take a beating in shipping. What's wanted is a two-way display—a box whose label can be read whether the box is standing up or lying on its side.

**Cheaper or Larger:** As far as private labels are concerned, chains—with the exception of the variety group—like their own brand line. This is especially true of food chains. Usually chains ask that, whenever a private-label product is equal in package size to the nationally advertised brand (NAB), it should be a bit cheaper than the NAB. When it is not cheaper than the NAB, then it should be a larger package. Almost all major food chains have their own brands. In drugs, there is a Rexall label in almost every field.

Anyone needing encouragement to sell through chains has only to con-

sider the success the chemical specialties are having in grocery stores. *Food Topics* reports these sales totals for last year: waxes and polishes, \$80 million; household insecticides, \$26 million; household disinfectants, \$21 million; bleaches, \$51 million; cellulose sponges, \$7 million; cleansers, \$51 million; synthetic detergents, \$367 million.

**Once They Succumb:** Excluding household insecticides, sales for similar products in drug stores are way below the figures just mentioned. Such a comparison may seem labored today, but when drug stores succumb to self-service and become "super" drug stores, the public will be buying more and more chemical specialties at such places.

Despite the lure of extra sales through chains, the manufacturer bent on entering the big, bustling chain store market must be prepared for tough competition. But if a store can net a 20% margin or better on his product, the specialties maker practically has his foot in the door.

## Gotham Get-together

Into New York's Hotel New Yorker next week (Dec. 6, 7, 8) moves the Chemical Specialties Manufacturers Assn. for its 41st annual meeting.

Monday's session is largely given over to registration and the meeting of division administrative committees—chores that had previously been carried out in the Sundays preceding the general meeting. Also, the Aerosol Festival exhibit, with 250 pressure-packed products from the U.S. and abroad, will be opened on Monday.

Some of the highlights of the general sessions on Tuesday and Wednesday:

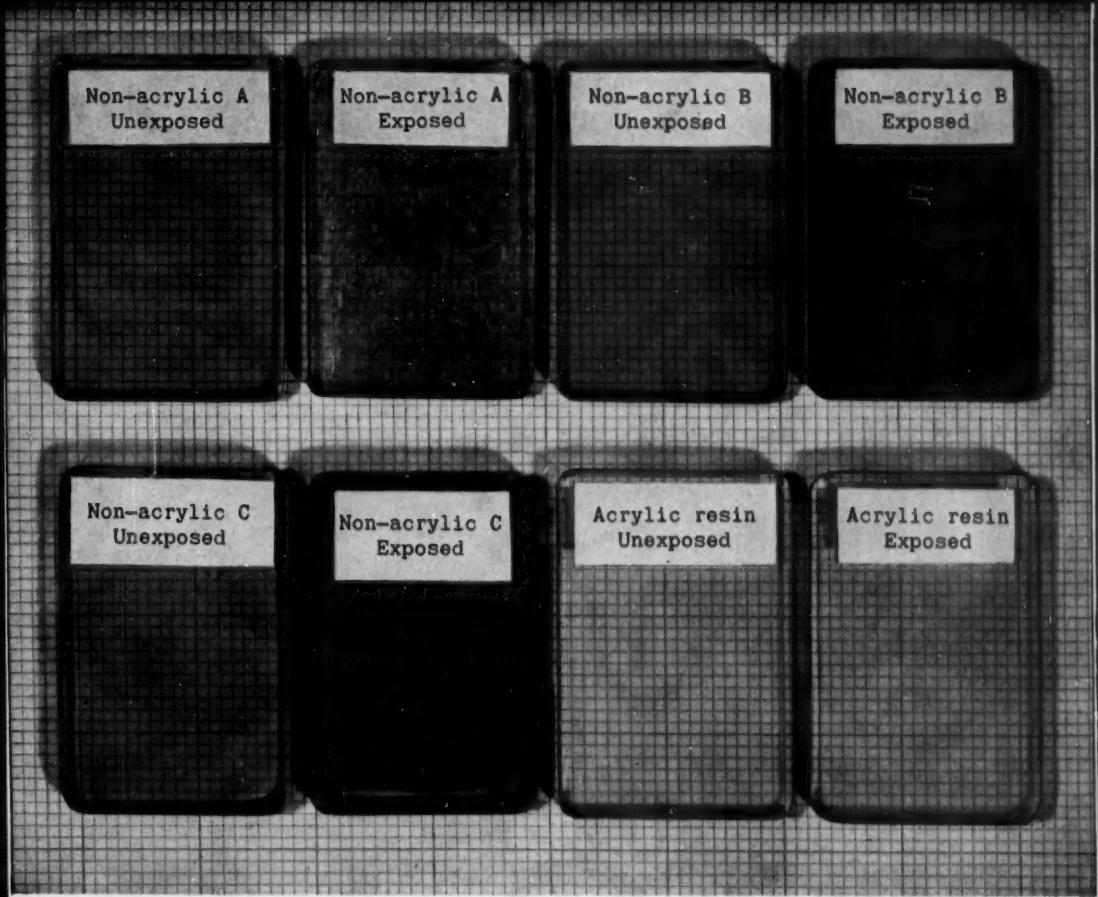
- Automotive Division's review of hydraulic brake fluids—including a survey on the fluids, manufacturing trends, and regulations concerning them.

- Soap, Detergents and Sanitary Chemical Products Division's meeting with the Disinfectants and Sanitizers Division on the uses of chlorinated alkaline detergents, new bleaches, and disinfectants.

- Disinfectants and Sanitizers Division review of the current status of various types of germ- and fungicidal products.

- Aerosol Division's papers on two of its favorite topics—glass aerosols and shave lathers. Also, a word about product liability. Wednesday, the aerosolers get together with the Automotive Division.

- Waxes and Floor Finishes Division's updating of techniques on polish



## How to grow old without aging by using Rohm & Haas acrylate and methacrylate monomers

If you've ever seen acrylic resin sheets or water paints based on acrylic emulsions, you probably know how little these products show the effects of age—how remarkably well they resist attack by heat, light, weather, chemicals.

Look at the photograph above. Various samples of plastic products were exposed to ultraviolet light for identical, extended periods. Compare each unexposed sample with its exposed counterpart. Note how little the acrylic material has changed.

### LOOK TO ROHM & HAAS FOR ACRYLIC MONOMERS:

Methyl acrylate	Butyl methacrylate
Ethyl acrylate	Hexyl methacrylate
Butyl acrylate	Decyl-octyl methacrylate
2-Ethylhexyl acrylate	Lauryl methacrylate
Methyl methacrylate	Stearly methacrylate
Ethyl methacrylate	Glacial methacrylic acid

The ability of many copolymers containing acrylates or methacrylates to resist aging is superior to that of the corresponding acrylic-free polymers. Copolymers of vinyl chloride and an acrylate, for example, have aging properties superior to polyvinyl chloride.

Among the monomers which will copolymerize readily with acrylates and methacrylates are vinyl acetate, vinylidene chloride, acrylonitrile, butadiene, and styrene. Send for authoritative literature on monomeric acrylic esters.

CHEMICALS

FOR INDUSTRY



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## SPECIALTIES . . .

manufacture and on biologically active floor coatings.

Open house, regular feature of the CSMA meetings, will be held on Tuesday night (Dec. 7) rather than on Monday night, as has been the custom in the past.

### Cheaper Propellents

A new series of propellents for pressure-packed aerosol products is offered by The Lenk Co. (Boston, Mass.), custom fillers.

The company says that a patent for the propellents—a mixture of hydrocarbons and dichloro-difluoro methane—has been applied for and that until it is granted the exact formula will not be divulged. Known as K21, K31, and K41, the propellents are said to be colorless, odorless, nontoxic and noncorrosive, have been designed to control vapor pressures, reduce hydrolysis and make use of low-priced hydrocarbons. They have been certified for shipment and approved as nonflammable by the Bureau of Explosives.

Lenk feels that a reduction in the cost of propellents (coupled with recent reductions in the cost of valves and other components) will open new fields for the aerosol industry.

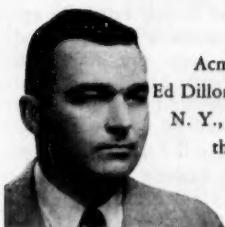


### Color Check

COLOR CONTROL of liquids—petroleum solvents, naphthas, syrups, and the like—has been given a greater degree of accuracy with a new Quarter Standard Color Disc, according to Fisher Scientific Co. (Pittsburgh). The glass disc, in the "plus 30" shade, sells for \$20.20, and is suggested for use in the Fisher/Tag Saybolt Chromometer (shown).



## AIM\* for SAFER shipping with Acme Steel Strapping Ideas



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problem.

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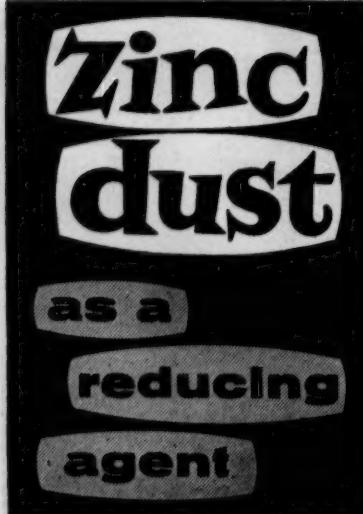
The day-in-and-day-out experience of shippers continues to be the best measure of the reliability of steel strapping for securing products safely, quickly and more economically. Oranburg Manufacturing Company proved this with Acme Steel Strapping methods that increased the rate of packaging pipe and conduit. Idea #408 has not only meant a saving for this manufacturer, but has reduced labor costs at the site of installation because of easier handling. And, because of the security of the steel strapped packages, shipments go through undamaged to customers everywhere.

Whether you're shipping small cartons or products weighing tons, your Acme Idea Man can help you find the solution to safe, economical shipping. Ask him. Or, write Acme Steel Products Division, Dept. TV-124, Acme Steel Company, 2840 Archer Avenue, Chicago 8, Illinois.

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2. Works in alkaline and acidic solutions of varying pH; also in aqueous and alcoholic solutions.
3. Yields a salable zinc by-product.
4. Effective in both organic and inorganic reactions.

## Federated

... is the country's largest producer of Zinc Dust, with plants at Trenton, N. J. and Sand Springs, Okla. We maintain extensive research facilities which permit us to give you active help on your particular problem. Our particle size control should allow us to fill your specific requirements.

Produced under rigid physical and chemical control, Federated Zinc Dust has 97.0% minimum metallic zinc content; iron content .01%, lead .20% maximum. It will all pass through a 100 mesh screen; 97.0% through a 325 mesh screen.

## Free Sample

You can have a free half-pint sample of Federated Zinc Dust for testing as a reducing agent. Just write on your company letterhead to Dept. CW at address below. Investigate it, too, as a catalyst and as a polymerizer.

## FEDERATED METALS DIVISION

American Smelting and Refining Company  
120 Broadway, New York 5, N.Y.

## SPECIALTIES . . . . .



LUSTUR-SEAL'S WILEY AND HALL: To sell auto polish, a drive aimed at dealers.

## The Shine's an Accessory

Plenty of welcome from automobile dealers. That's what accounts for the galloping pace of Lustur-Seal Corp. (Jackson, Mich.), a firm that after only six years of existence now requires a force of nearly 50 to turn out its three auto specialties.

Acquiring this year the backing of Chrysler's accessories division, Lustur-Seal now has the firm support of 13 auto makers in promoting its "appearance conditioning" process. It has become one of the most widely accepted of professionally applied auto polishes.

Actually, Lustur-Seal's two owners, D. R. (Doc) Wiley and Ed Hall, don't like to term their product a polish—preferred term is "paint conditioner." The formulation was worked out by Wiley shortly after the war, when he had settled down in California with the prime aim of raising chickens.

According to Wiley, Lustur-Seal contains no waxes, resins, glycerine, or silicones. As a result, he says, it doesn't leave a hard-to-remove finish like waxes or silicones, won't "clog paint pores," and doesn't streak. It is claimed to enhance the shine and durability of painted surface, and is recommended by Ford and Mercury for polishing the Plexiglas tops on some of their sport model cars.

**Squeeze-Bottle Pack:** Just what Lustur-Seal is, Wiley won't say. But most auto polishes are either wax-, silicone-, or oil-based, and competitors guess that Lustur-Seal is a water emulsion of oil, pigments, etc. It is a

thick, white liquid, sold in sturdy polyethylene containers. (The labeling is varied, so that each make of car has its own special container of Lustur-Seal.) Two formulas are sold: No. 1, the polish for new cars, and No. 2 for cars with oxidized finishes (it contains abrasive). These two products are supplemented by Haze Cream, for between-treatment car care.

Big factor in Lustur-Seal's success has been its distribution setup. Lustur-Seal 1 and 2 are never sold over the counter to auto owners. Only the Lustur-Sealing treatment is sold to the motorist—the polish must be applied in small areas at a time, and machine-buffed into the finish. A dealer uses about \$2.25 worth of chemical per car, and with overhead and labor at about \$6, he has a process that he can sell for \$25. An aggressive dealer, making the Lustur-Seal treatment a practically required accessory, has a lucrative enterprise, indeed. Dealers sell only Haze Cream (\$1.25) to the motorist for his own use.

**Price for Looks:** In addition to turning in a tidy profit when applied to new cars, Lustur-Seal can greatly improve the appearance—and salability—of used cars. It's a favorite tale that the same used Buick sedan that a couple turned down one day for \$725 was sold to them the following day for \$900—after it had been Lustur-Sealed.

The combination of a smart selling plan and a good product has put Wiley and Hall in an enviable position. They originally had their plant

# *Now—a New High in Quantity and Quality*

## MALEIC ANHYDRIDE AND FUMARIC ACID

*through the addition of this  
NEW NATIONAL ANILINE PLANT at  
MOUNDSVILLE, W. VA.*



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Our Moundsville plant is now producing Maleic Anhydride in improved tablet form that resists degradation in handling and minimizes fines. In quality, uniformity and form, this new production sets an industry standard of excellence.

We will be pleased to submit samples, technical data and prices—for immediate delivery.

Get in touch with National Aniline for any of these Resin Intermediates, Plasticizer Intermediates or related Organic Chemicals.

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Fumaric Acid

Nadic Anhydride

Adipic Acid

Phthalic Anhydride

Succinic Anhydride

Tetrahydrophthalic Anhydride

Hexahydrophthalic Anhydride

Monochloromaleic Anhydride

Malic Acid

Maleic Acid

Succinic Acid

Dodecenylicsuccinic Anhydride

Meta-phenylenediamine

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We mine the basic materials that go into the high grade chemicals that we produce for industry.

We have spent many years of research in developing chemicals for industry from these basic materials. From the raw material to the finished product we maintain constant uniform quality.

### Industrial Crystals COPPER SULPHATE

This new improved form of Copper Sulphate Crystals, designated as Industrial Crystals Copper Sulphate is uniform in structure and free-flowing and is readily adaptable to all types of solution equipment.

In addition to the Industrial Crystals Copper Sulphate, regular Copper Sulphate Crystals are offered.

### COPPER HYDRATE

This versatile and highly reactive copper salt is being produced by Tennessee Corporation

with high purity and exceptionally good stability characteristics.

### CUPRIC OXIDE

Tennessee Corporation is producing a high grade Cupric Oxide of exceptional purity.

In addition, the following quality industrial chemicals are offered:

### COPPER CARBONATE

### ZINC SULPHATE

### FERRIC IRON

### SULPHATE

### SULPHUR DIOXIDE

Samples, specifications and detailed information available upon request.

TENNESSEE  CORPORATION

617-629 Grant Building, Atlanta, Ga.

## SPECIALTIES . . . . .

in Anaheim, Calif.; in 1948 they moved to Jackson, Mich., to be nearer the automobile manufacturing companies. After a slow start in getting dealer acceptance, the idea caught on rapidly. By 1953, Wiley and Hall could buy out their other backers, and

become sole owners of Lustur-Seal Corp.

Because Lustur-Seal is of interest to both new and used car dealers, they feel they've got a growing product no matter how the auto market fluctuates.



KENNEL CLEANUP: Safe-to-animals iodine form scores as disinfectant.

## New Chores for Iodine

Add a new one—Iodophor—to the list of disinfecting compounds. Chemically an iodine-surface active agent complex, it is claimed by its inventors, West Disinfecting Co. (New York) to combine all the bactericidal properties of iodine with the added advantages of water solubility, low mammalian toxicity, and a commercially feasible price.

Introduced officially last fortnight, it has already been incorporated in several of West's sanitizing products; the first was Showersan, quietly marketed about six months ago. It's only now, however, that West is releasing details.

The iodine complexes are the outgrowth of work begun by the late Dr. Herman Shelanski, who had worked out formulations of iodine with polyvinyl pyrrolidone (made by General Aniline & Film Co.) that had safe, germ-killing properties. A much more commercially feasible product was produced, however, when the iodine was made to react with certain surface active agents, generally polyoxyethylene condensation products.

The resulting complex, currently marketed as thin, mahogany-colored liquid, retains a strong iodine-like

odor. Diluted to use proportions—to an available iodine strength of perhaps 50 parts per million—it is a light, amber-colored solution. The concentrate, being water soluble, easily washes out of most fabrics. The diluted form is able to kill quickly (within 60 seconds) the extremely broad range of microorganisms affected by iodine, including tuberculosis bacilla, influenza virus, and polio virus. (West is not suggesting, however, that its product is an internal medicine.)

West, as a long-time factor in the sanitizing field, is pushing Iodophor for environmental sanitation—for cleaning and disinfecting everything from food processing plants and equipment to homes and hospitals. Formulations for use around the home (products of the nature of West's CN) have already been test-marketed. It can also be used topically, like tincture of iodine, and possesses the important advantage of not stinging or burning the flesh.

West says Iodophor's low toxicity makes it particularly suitable for cleaning such things as kennels (*see cut*), where the areas must be kept clean, but where a toxic disinfectant



CHEMICAL FOR TENITE BUTYRATE USED FOR NEW PLASTIC PIPE



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VARNISH, SHELLAC AND PAINT

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complete line  
of high quality  
petroleum chemicals

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Acetone  
Methyl Ethyl Ketone  
Dicyclopentadiene  
Ethyl Ether  
Isopropyl Ether  
Naphthenic Acids  
Iso-Octyl Alcohol  
Decyl Alcohol  
Denatured Ethyl Alcohol

**CHEMICAL**

PETROHOL 91  
PETROHOL 95  
PETROHOL 99  
JAYSOL  
Iso-Octyl Alcohol  
Decyl Alcohol  
Denatured Ethyl Alcohol  
Tridecyl Alcohol  
Dicyclopentadiene  
Isoprene  
Butadiene  
Ethyl Ether  
Isopropyl Ether  
Tetrapropylene  
Tripropylene  
Aromatic Tars  
Benzene  
Acetone  
Methyl Ethyl Ketone

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- m-Tolualdehyde
- p-Tolylsemicarbazine
- Triacetoneamine
- Triallylamine
- 1,2,3-Triaminopropane
- 4,5,6-Triaminopyrimidine
- Triazole
- Trichlorogermane
- Trichlorosilane
- Triethanolamine Trinitrate
- Triethyl Antimony
- Triethyl Borate
- Triethylcholine
- Triethylenemelamine
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## SPECIALTIES . . .

can't be used because of possible hazard to "inmates."

So far, the uses for Iodophor are much the same as those for such established products as quaternaries, chlorine-releasing agents, and phenolics. It is priced competitively, and is applied similarly.

West points out an extra plus when the solution is used for germicidal solutions (such as for anti-athlete's foot baths in gyms): the solution's color is an indication of its strength, and when it becomes colorless instead of amber, it needs replacement.

Iodophor is not the first of the stingsome iodine forms. Some three years ago, Vodine, a 2% suspension of iodine in a lecithin base was introduced for topical use by Lanteen Laboratories, Inc. (Chicago). In addition, other forms have enjoyed varying commercial success. But West knows of its product's predecessors and competitors, and still believes Iodophor has a big future.

**Finish Starter:** Dow Chemical Co. has introduced a new resinous polyalcohol for use as the starting material in the making of chemically resistant finishes and primers. Tagged Dow Resin 622, it can be esterified to form vehicles for spar and floor varnishes, enamels, maintenance paints, etc.,—vehicles said to have good solubility in aliphatic solvents, as well as good durability, flexibility, and water- and alkali-resistance.

**Drain Clear:** Test-marketed in Indianapolis and slated for national distribution soon is a new liquid drain cleaner called Jiff-ee Liquid Drain Opener. Made by Jiffee Chemical Corp. (Indianapolis), it is said to be odorless, and nonhazardous to use.

**Phosphate Booster:** Stepan Chemical Co. (Chicago) is promoting a new nonionic fatty acid alkylolamine surface active agent, tagged Stepan HDA-7. Designed for formulations of heavy-duty surface cleaners, it is said to permit a phosphate content as high as 11%.

**Cheaper Supplement:** A new procaine penicillin product for poultry feeds has been introduced by the Animal Nutrition Sales Dept. of Commercial Solvents Corp. Penline-200, as it is labeled, is said to produce the advantages of antibiotic feeds, and yet save \$5-\$12/ton of feed in manufacturing costs.

**Peel Special:** A novel way to strip polyvinyl alkanal resin coatings from

metal has been worked out by Stepan Chemical Co.'s Wilfred Crepeau and Vincent Sullivan, Jr. The process involves treating the coated article with dimethyl sulfoxide until the resin has softened and swelled, then separating the resin from the metal base (U.S. Pat. 2,694,658).

**One-Two for Germs:** A combination of quaternary ammonium compound synergized with dodecyl benzene has been developed by Richard Stayner of the California Research Corp. (San Francisco) as an antimicrobial agent. Suggested product (U.S. Pat. 2,694,663) contains 92-98% by weight of N-dodecylbenzyl-N,N,N-trimethyl quaternary ammonium chloride and 2-8% dodecyl benzene.

**Improved Finish:** V. J. Dolan & Co., Inc. (Chicago) is offering an improved type of finish, Dolvar, for wood. Besides being resistant to alcohol and water, the product neither blisters nor mars if a burning cigarette is left in contact with it for two or three minutes, the firm claims. The finish may be baked or air-dried.

**Trademark:** Hooker Electrochemical Co. (Niagara Falls, N.Y.) has registered the trademark Hetron with the U.S. and Canadian governments for its flame-resistant polyester resins.

**Addition:** Carbofine Co. (St. Louis), maker of protective coatings and adhesives, has added Neoprene No. 750 sheet lining to its list of products. It's usable in the transportation, storage and handling of acids, plating solutions, alkalies and various inorganic salt solutions at temperatures up to 190 F, Carbofine states.

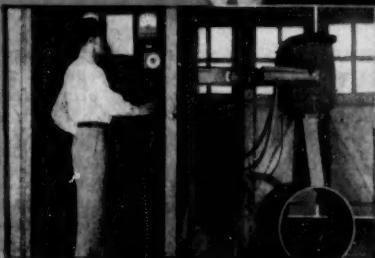
**Heat Foe:** Calcium naphthalene, coumarone-indene resin, paraffin oil, and a hydrocarbon solvent, along with aluminum powder are combined in a coating devised by Morris Braunstein to produce a heat-resistant coating on sheet iron (U.S. Pat. 2,694,691).

**Abrasion Antibiotic:** Lederle Laboratories has begun marketing Aureomycin Calcium Cream for preventing and treating infection in minor cuts.

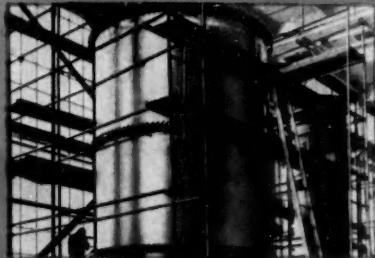
**Polyester Paint Roller:** The Du Pont Finishes Division has brought out an all-purpose paint roller with a fleece covering of Dacron polyester fiber. Claims: it will hold 27% more paint than the average of all other types, will not mat nor wilt.

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be sure  
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If you are building a new chemical plant, changing a process, installing new equipment or renovating existing facilities, you want your process equipment designed, built and inspected in terms of your own special needs. Vulcan Manufacturing Division, by means of numerous specialized fabrication techniques (including those shown at left) and a thoroughly experienced process and mechanical design staff, can do that kind of job for you. This results from 53 years' experience in designing and building pressure vessel equipment for the chemical and process industries. Why not gain the advantages of this experience for your company? From either your performance or mechanical specifications, our design and fabrication people can assure you equipment that will meet the requirements of your particular operating conditions, process specifications and budget. Ask for estimates and design suggestions on your next project.



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# DURADOME

## TANK CAR PRODUCTION HIGHLIGHTS



### PLANING ...

Heavy gauge steel plate is cut to precision width with edges squared and beveled for fitting and welding—all in one automatic planing operation.



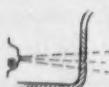
### ROLLING ...

Steel plate is then precision roll-formed by heavy duty rolls capable of handling large steel plates up to two inches thick.



### FLUING ...

A specially-built giant press forms the dome base by actually pressing and fluing it out of the heavy center section.



### X-RAYING ...

Automatic butt welds are used throughout. This results in stronger joints, and permits direct x-raying, guaranteeing sound welds.

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## acf built **DURADOME** *flued dome tank car*

### Improved 4 ways

1 *Flued Dome* . . . dome base actually pressed out of heavy steel plate — eliminating fillet welds and dome shelf for more strength and corrosion resistance.

2 *Pressure-type Construction* . . . uses complete "ring-sections" or cylinders to build up the tank. That means heavier steel all the way around for greater durability.

3 *All-welded Insulation Jacket* (when required) . . . angles and bolts completely eliminated. Streamlined—more weatherproof—needs less maintenance.

4 *Standardized Underframe* . . . the same, all-welded underframe for tanks of all standard types and capacities. Provides flexibility; economical maintenance!



The DURADOME car is available for lease or sale through . . .



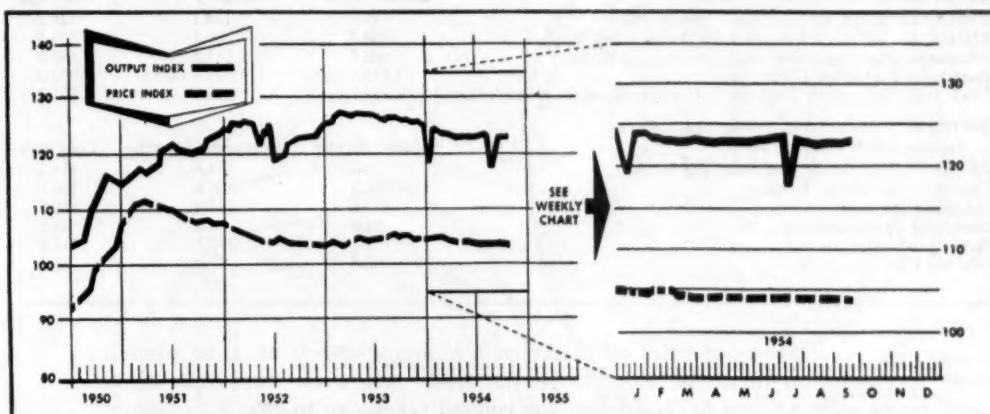
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# MARKETS . . . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries  
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

## MARKET LETTER

The event of most particular import to marketers this past week, concerns a significant—and unexpected—price cut in acetone. The  $1\frac{1}{2}\text{¢}/\text{lb}$ . reduction, initiated officially by Shell Chemical, caught most acetone producers flat-footed. Until the posting, belief was that just about all under-the-counter activity in acetone had disappeared. But apparently knife-edged competition was sharp enough to call for retaliative measures.

So far, at least two other major makers have reluctantly followed Shell's suit; others are actively contemplating a course of action, though it seems likely that the new  $7\frac{1}{2}\text{¢}$  price will become industry standard. One complicating factor in the seething acetone market right now is the fact that week after next (Dec. 15), marks deadline day for quoting first-quarter prices to contract customers.

**A move to lure new customers.** That's the reason behind Carbide and Carbon's  $1\frac{1}{4}\text{¢}/\text{lb}$ . slash in its Flexol plasticizer CC-55 (di-2-ethylhexyl hexahydrophthalate) announced late last week.

Though the company is sole producer of the material, plasticizer business in general has kept producers on their toes. The substantial reduction—which sets tank-car tags at  $30\frac{1}{2}\text{¢}/\text{lb}$ .—may well have an impact on other similar products' demand.

**Look for higher prices on nickel oxides and salts.** International Nickel's hiking of the metal by  $4\frac{1}{2}\text{¢}/\text{lb}$ .—because of higher manufacturing costs, says a company spokesman—will doubtlessly nudge nickel derivatives.

The new metal price ( $64\frac{1}{2}\text{¢}$  to U.S. consumers) includes  $1\frac{1}{4}\text{¢}$  import duty. Nickel continues to be one of the few products still in a tight category, primarily because of the government's brisk stock-pile buying. Many metal-plating customers are on a producers' allocation system. The pinched situation, too, accounts for the premium prices currently being quoted for several nickel salts by some resellers.

## MARKET LETTER

### WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	124.1	124.1	125.2
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.2	104.2	104.9
Bituminous Coal Production (daily average, 1,000 tons)	1,483.0	1,511.0	1,496.0
Steel Ingot Production (1,000 tons)	1,919.0 (est.)	1,915.0 (act.)	1,972.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	353.9	345.3	261.9

### MONTHLY INDICATORS—Wholesale Prices (Index 1947-1949=100)

	Latest Month	Preceding Month	Year Ago
All Commodities (other than Farm and Foods)	114.5	114.4	114.6
Chemicals and Allied Products	106.9	106.8	106.7
Industrial Chemicals	117.6	117.4	119.5
Drugs and Pharmaceuticals	93.6	94.0	93.5
Fertilizer Materials	112.1	112.3	112.9
Oils and Fats	56.6	54.0	53.3

Scarcity of fusel oil is having a bumping effect on some related fermentation products. Reports in the trade last week were that some users were paying 5¢/lb. higher for refined fusel—up to 22¢, c. l. Lower output levels of U. S. fermentation alcohol plus cutbacks in whiskey production are reasons for the current shortage; chances are the situation will not soon be alleviated.

Fermentation amyl alcohol prices have already been boosted (e.g., new c. l. tag is 42¢/lb.), and some observers expect fermentation amyl acetate will also go higher.

Short supply, good demand—that's frankly stated as the reason for newly posted higher pine oil prices. The increases, which came late last week—though not unexpectedly—reflect the firmer tone prevailing in most naval stores items.

Gum and wood resin producers are hard-pressed keeping up with customers' calls. The market condition may presage further hikes.

Somewhat of a surprise to market followers was last week's earlier-than-anticipated entry of Eastman Chemicals, Longview, Tex., plant into the polyethylene arena. The company, already turning out the material at a commercial scale (20 million lbs./year), thus becomes the fourth—of an eventual list of some eight or nine producers—whose output will contribute to the U. S. polyethylene flood due by next year. (On deck at the moment is Monsanto's Texas City installation. The latter's capacity is rated at 66 million lbs./year.)

Eastman's product, though in a new spherical pellet form, is priced in line with going polyethylene market quotes.

Too low; that's the nub of domestic muriate of potash sellers' complaints anent prices of imported material (*see page 19*). Some market followers, making comparisons with foreign producers' offerings to other countries (e.g., England) say tags here are undercut as much as 39%.

### SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending November 29, 1954

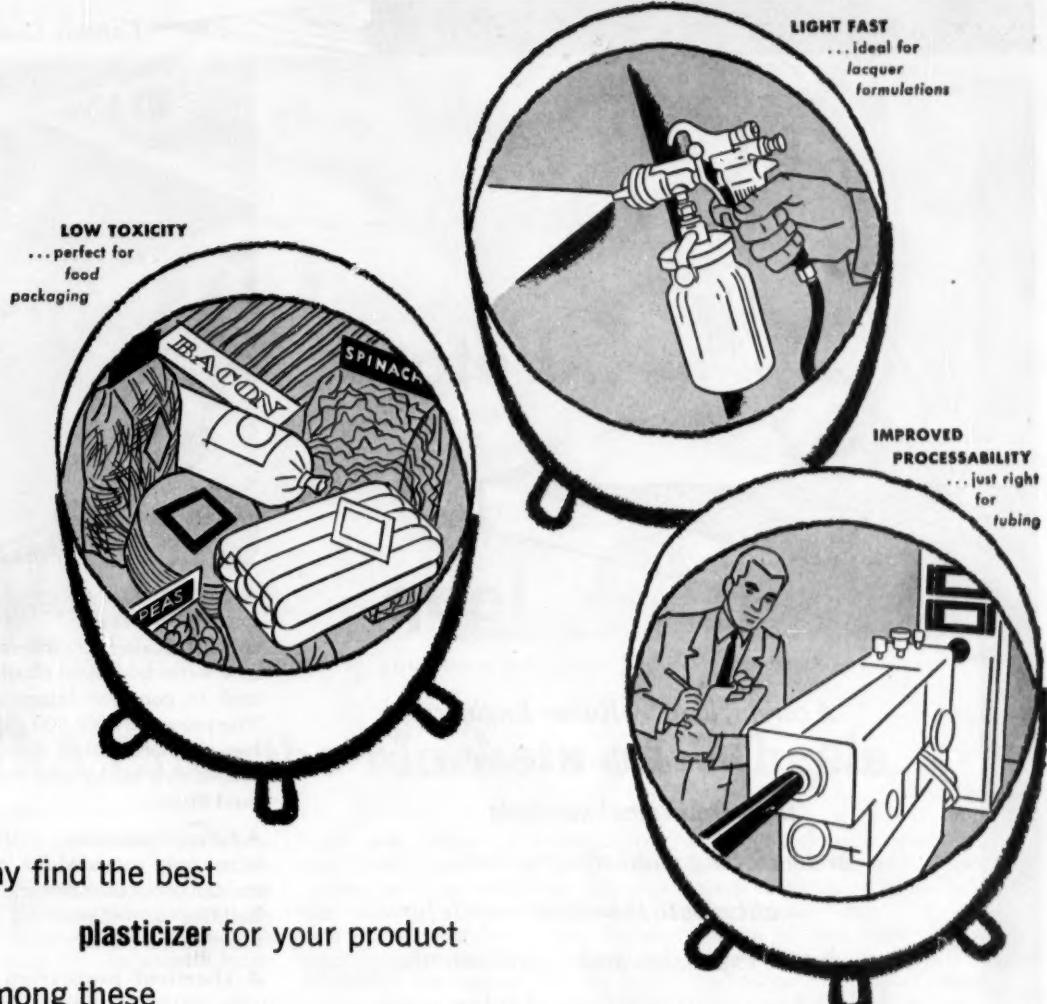
#### UP

	Change	New Price		Change	New Price
Naphthalene, crude, imp., 78°, large lots	\$.005	\$.055	Pine oil, steam distilled, dms., ex warehouse, N.Y.C.	\$.012	\$.163
Nickel, metal, electro cathodes, cases, works	.045	.645			

#### DOWN

	Change	New Price		Change	New Price
Acetone, tanks, divd.	\$.005	\$.075	Di-2-ethylhexylhexahydro-phthalate, t.c. lots	\$.0125	\$.305

All prices per pound unless quantity is stated.



you may find the best  
plasticizer for your product  
among these

## **PFIZER CITRIC ACID ESTERS**

**Acetyl Triethyl Citrate:** Highly recommended as a plasticizer for cellulose acetate and other cellulosic derivatives. Less volatile than many plasticizers commonly used with cellulose acetate. Results in improved heat and light stability.

**Triethyl Citrate:** Recommended as a solvent plasticizer for cellulose acetate and other cellulosic derivatives. Has low solubility in oil. Ideal for products which must be resistant to oil and grease.

**Acetyl Tributyl Citrate:** Recommended particularly for heat and light stable polyvinyl chloride film, sheeting and extrusions. Extremely low in

toxicity, it lends itself to the production of food wrappings and other products in which toxicity is a factor.

**Tributyl Citrate:** Recommended for vinyl film, sheeting and extrusions. This low-toxicity plasticizer is especially desirable for food packaging, beverage tubing, hospital sheeting and apparel which may contact the skin. *Also an effective anti-foaming agent, particularly where toxicity is a factor.*

For additional information about these products, write for Technical Bulletin #31, "Pfizer Citric Acid Esters as Plasticizers."

**CHAS. PFIZER & CO., INC.**

CHEMICAL SALES DIVISION

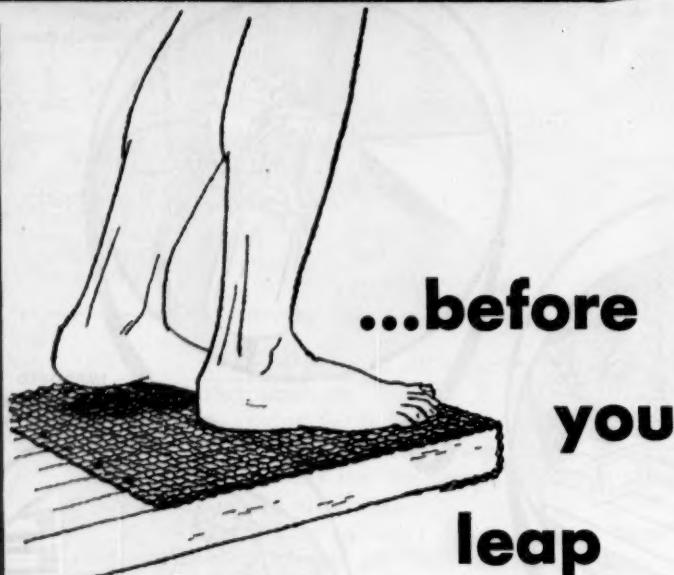
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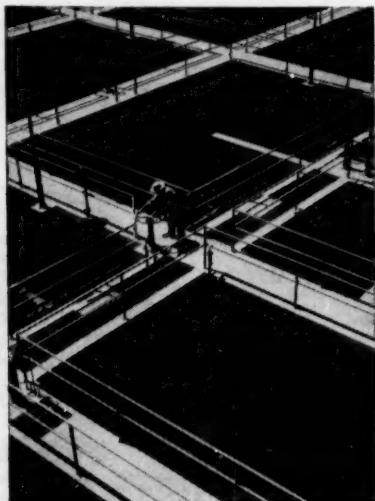
**Pfizer**

Capsule Case History:



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*Numerous examples of this type of cost-saving engineering foresight are to be found in work performed by Kaiser Engineers in the broad fields of industrial design and construction.*



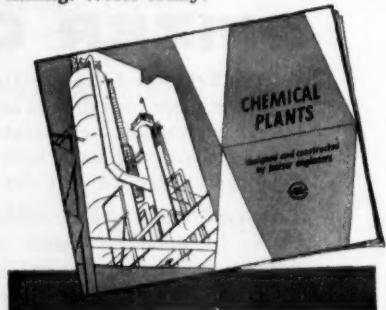
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Expects To Grow**

so when Kaiser Engineers designed a new water treatment plant it was natural to consider future expansions. The present 21,000,000 gal/day plant has six flocculation tanks, six sedimentation tanks and twelve rapid sand filters.

**A Future Expansion**

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## CMRA Cites the Markets on Wheels

Market analysts, leaving the aristocratic Sheraton-Cadillac hotel in Detroit the other week, carried away with them this trenchant thought: the automobile industry has been, is, and will continue to be one of chemicals' better customers.

The occasion, which drew attendants from most every section of the country: the Chemical Market Research Assn.'s all-day Automotive Industry meeting.

Scope of an ever-widening market for chemicals in the auto industry is typified by the multimillion-pound, multimillion-gallon consumption figures advanced at the session. A few: 250 million lbs. of detergents, inhibitors, and other lubricating oil additives; about 28.3 million lbs. of chemicals for molded plastic parts; some 470 million lbs. and more than 100 million gal. of gasoline additives; 43 million lbs. of chemically blown elastomer; at least 2.5 million lbs. of nylon for automobile upholstery alone.

**Lots of Plastics:** Take plastics use in autos, for instance. In a fact-packed talk, Ford's J. K. Totten focused marketers' attention on the whole gamut of outlets. He terms plastics consumption as "fairly static," but envisions a year-to-year rise due to a trend to larger parts—lens, arm rest bases, use of more plastic knobs.

There's a "tremendous potential" for increased use of plastics as interior

trim in auto bodies. But, it was pointed out, the initiative to step up this use must come from outside the automobile industry. "Customer demands; new materials at lower cost; better machinery for molding, forming or fabricating the material are the keys to the greater market for plastics in automobiles," Totten said.

Today the average car uses about 4 lbs. of thermoplastics and about  $\frac{3}{4}$  lb. of thermosettings. In terms of basic chemicals, Totten estimates the gross poundage to supply the automotive industry with molded parts at about 28,340,000 lbs. (See table for the poundage breakdown of some of the basic chemical groups required).

**Painting New Markets:** Paintmakers, as well as sellers of paint ingredients, may well attune to the remarks made by Ford's Melvin Gerson. Discussing the outlook for paint use in automobile plants, he envisions some immediate changes in the offing. For example, Gerson predicts "an increase in use of water emulsion materials, because of reduced health and safety hazard to the industry," and also expects a jack-up consumption of epoxy undercoats.

Emphasized as one of the major areas of importance to the automobile maker was the special purpose paints (e.g., motor block enamels, chassis paints, paints for window regulators

and door lock arms, steering wheels, instrument panels, etc.). Gerson pegs annual consumption by the industry at some 24 million gal.

Much of this amount is sold as asphalt-base paints, but he lightly touched on the impact some other types may have on U.S. markets. In this country, the polyurethanes are "curiosities"; in Germany they are actively replacing others as chassis paints, under-the-hood paints, etc.

About three years ago, Ford pioneered the use of silicone paints as an automotive production line finish because of its heat-resistant qualities. As a result of better manufacturing techniques stimulated by the ensuing volume requirements, cost/gallon of the paint was slashed almost 30%, down to slightly more than \$7.

Another facet in the manufacture and assembly of cars of particular interest to chemical product marketers is body painting. Here, Gerson estimates that of the approximately 7 gal. of paint consumed per unit, some 4 gal. may be classed as body paint. That pinpoints an outlet totaling about 32 million gal./year. These paints fall into two classes, undercoats and color coats. In the former, alkyd resins, modified with small amounts of urea-formaldehyde resins are currently standard. Epoxies, however, used in conjunction with a catalyst such as diamine, poly-

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## M A R K E T S . . . . .

basic acid, or other polyfunctional compound, is perking interest. Reason: their excellent adhesion to a wide variety of substances.

**Fiber Target:** Nylon is one fiber that most nearly meets the needs of the automobile industry. Edwin Grajeck of Collins & Aikman, discoursing on synthetic fibers for automotive upholstery fabrics, tabs nylon consumption this year at about 2.5 million lbs.

Grajeck takes note of all the activity in polymer research by the chemical industry, suggests that polymeric materials are potential finishes for upholstery fabrics. The organosilicon polymers can well be included in this connection.

**Adds Up:** The sharp rise in the use of additive oils in the last five years has resulted in a 250% increase in the dollar market value—from about \$39 million in '48 to \$108 million last year, reported E. F. H. Pennekamp, of Standard Oil Development Company's Enjay Laboratories Division.

The average additive investment per gallon of oil treated has more than doubled (from about 5¢ to approximately 11¢/gal.) in this period, but Pennekamp pointed out that compared with the 16% rise in the general price index, the additive cost in treating an oil to a given performance level has actually decreased by 20%.

Breaking down last year's market by additive types underlines detergents and inhibitors as far outweighing all other classes of chemicals used. That group alone cornered some 66% of the total dollar market, gulped about 170 million lbs. of chemicals in the finished products.

Viscosity index improvers and pour depressants ticked off another 16% and consumed about 30 million lbs. of chemicals, while extreme pressure and other miscellaneous additives rounded out the percentage take.

On the assumption that the over-all manufacturing yield of chemicals in the additive business is about 65%, Pennekamp came up with this estimate: about 400 million lbs. of chemicals were consumed last year to produce the more than 250 million lbs. of lube oil additives.

Over the past year or two, gasoline additives have garnered an unprecedented share of motorists' attentions, principally through some hefty all-out advertising campaigns. But the fact is that the use of additives is playing an important part in the refining and production of modern gasolines—and having a salutary impact on the sales curves of a number of chemical industry products.

Ethyl Corp.'s R. K. Scales pegs the

annual consumption of deposit modifiers (e.g., phosphorus compounds such as Shell's tricresyl phosphate and Ethyl's chloropropyl thionophosphate), aimed at reducing surface ignition and spark plug fouling, at about 8 million lbs./year, with a value of \$3 million.

Yearly take of gasoline anti-oxidants—amino phenols, alkylated phenols and alkylated phenylenediamines—is hitting a 6-million-lbs. clip, worth some \$7 million; while rust inhibitors, among them ammonium sulfonates and organic phosphorus compounds, runs about 5 million lbs.

Add too, these profit-making items sold by chemical companies to the auto-made markets: about \$27 million worth, or 83 million gal./year, of alcohol additives; 20 million gal. of up-

**Auto plastics take  
these chemicals . . .  
(thousand pounds)**

Cresols, melamines	850.0
Aldehydes	850.0
Acid anhydrides	4,000.0
Vinyl alcohol	2,500.0
Cellulose	4,000.0
Phthalates, glycols, alcohols, sebacics, polyesters, etc.	800.0
Coloring agents	160.0
Fillers, woodflour, asbestos, clay, etc.	1,350.0
Acrylic acid	7,200.0
Amino acids	4,000.0
Misc. chemicals	2,500.0

per cylinder lubes; several million dollars of a copper chelating agent.

Still tops among gasoline additives, however, reports Scales, is the old-timer, tetraethyl lead. Consumption in both automotive and aviation gasolines annually hits between 400 and 450 million lbs.—a \$250-million business.

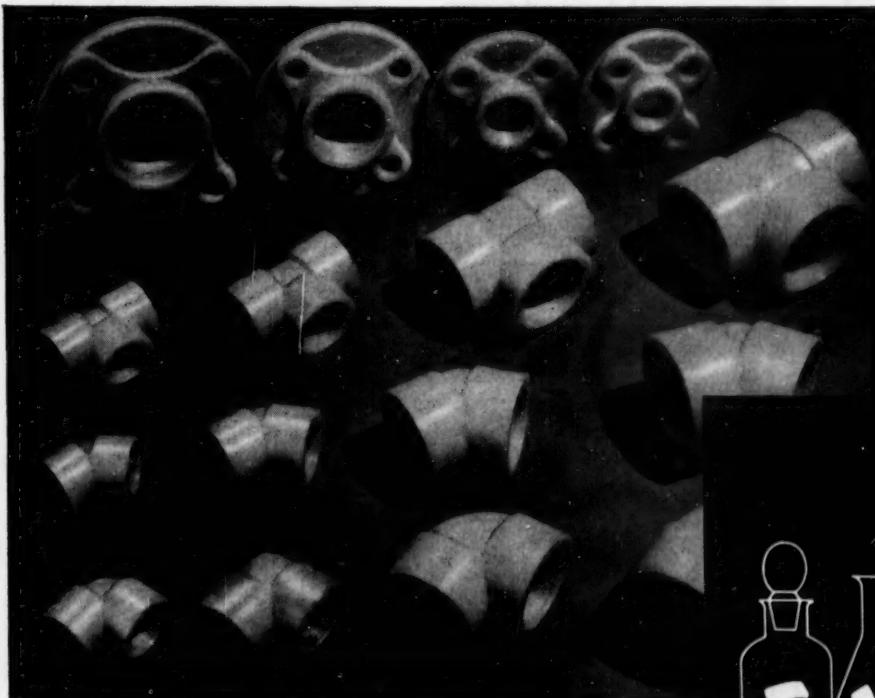
**More Boom:** Foams of latex rubber, polyester/polyisocyanate, and vinyl, were discussed by Goodyear's Thomas Rogers. Typical of the trend toward the use of these cellular elastomeric materials are the use and output figures of latex foam. Rogers traces the industry's almost continual expansion since its beginning in the middle '30s. It progressed from an 18-million-lb. business for the best prewar year to 160 million during '53, and the automobile industry has been the best customer. That one outlet, for example, consumed almost half of 1950's production.

While latex foam has the edge in preference at the moment, Rogers said that the newer-type foam materials have some properties that make them

unplasticized P.V.C. now can be

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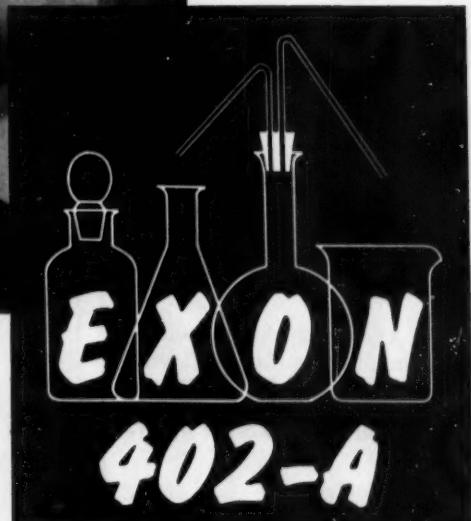
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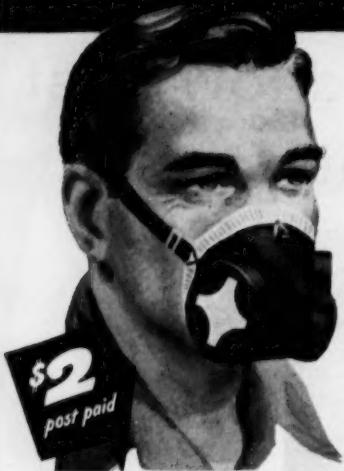
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## M A R K E T S . . . . .

better suited for certain applications, thus enhancing the possibility that they will grow to substantial volumes.

Thoroughly covering the fields of mechanical goods and seals, butyl rubber and other specialized compounds, another Ford official, James O'Reilly, pointed out that in the decade between 1940 and 1950, the number of rubber parts used in the average car has jumped from 267 items weighing 57 lbs. to 540 items weighing 100 lbs. He foresees no reason why the growth trend should not continue.

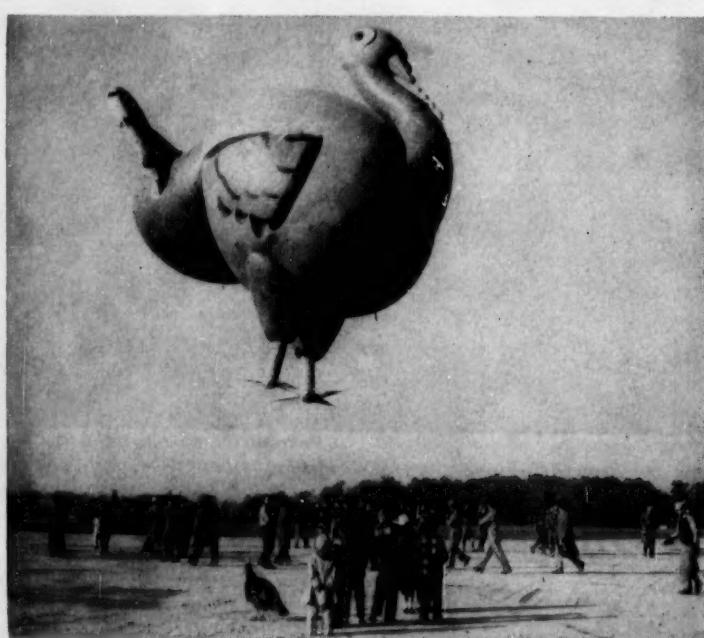
O'Reilly also cited the success of silicones and nylon moldings in automotive applications as an example "that high price is not an insurmountable hurdle."

**Pastel Paints:** Color was the keynote of the evening talk given by Chrysler Corp.'s vice-president, A. vanderZee.

Introduction of cadmium and titanium-pigment enamels has permitted car stylists to select color schemes from the entire range of the spectrum, said vanderZee, and added that research in the chemical and paint industries has provided finishes that last up to 10 times longer than those of 30 years ago.

Ford's H. N. Bogart, held the gathered chemical marketers' attention with his comprehensive discourse on shell molding. He outlined the part his company has played in bringing the resin-sand method to the front as a chemical industry outlet.

And as CMRA's Detroit meeting drew to a close, this fact became more and more evident: the pursuits of the automotive and chemical industries are closely woven; their future should continue to be mutually profitable.



## Helium Gobbler

LAST WEEK — on Thanksgiving Day—millions, on the streets and via television, enjoyed Macy's parade, which ushered in the holiday season in New York City. Few observers, however, were aware of the connotation for the chemical process industries of the stories-tall, rubberized, gas-borne balloons (*see cut*): the six huge Goodyear-made figures were inflated with helium—some 60,000 cu. ft. of it.

"This," says the rubber company's E. M. Eickmann, "makes Macy the largest private consumer of helium in the world."

But the big store's yearly use of the gas is merely a puff in the wind compared with the government's consumption. Of the 112.0 million cu. ft. produced in 1951 (last figures officially posted by the Bureau of Mines), federal agencies consumed about 70%.

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P-57

Plants at Neville Island, Pa., and Anaheim, Cal.

December 4, 1954 • Chemical Week

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These ethylene oxide derivatives of Hercules Rosin Amine D, are viscous liquids or wax-like solids. They are soluble in water, hydrocarbons, alcohols, alkalies, and acids and brines, depending on molecular weight. Mildly cationic surface active agents, Polyrad adsorbs readily on metallic surfaces.

Polyrad surfactants have already indicated their value in many ways. For anti-cratering action and bath mud control, they are useful in rayon manufacture. Their wide range of performance includes wetting agents, emulsifiers, and demulsification chemicals. As corrosion inhibitors for mineral acids and brines, they are used in crude oil wells and petroleum refineries, and as inhibitors (and wetting agents) for hydrochloric acid in oil well acidizing and industrial cleaning compounds.

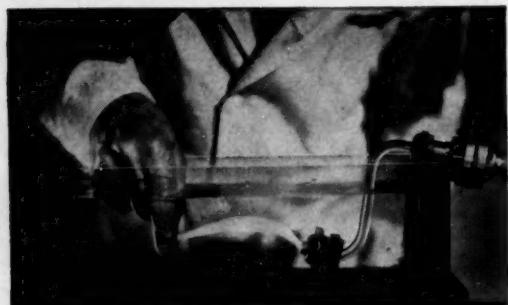
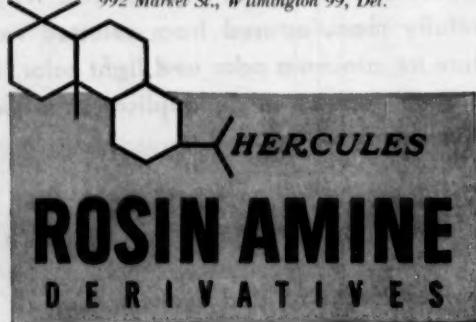
If the versatile Polyrad group appears to have potential value to you we'd be glad to work with you in exploring it further. Technical information will be sent on request.

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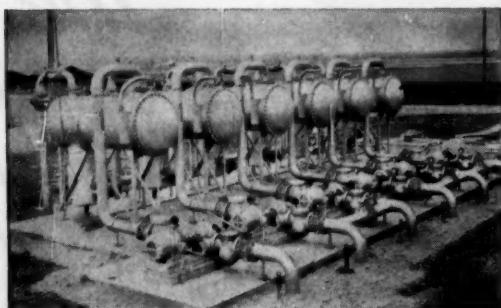
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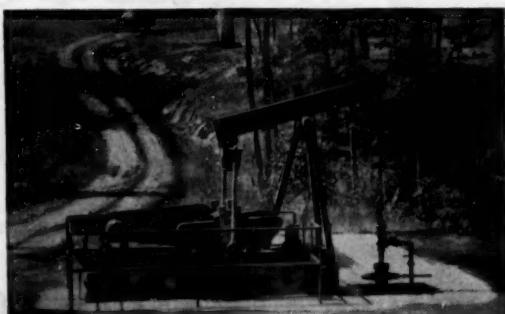
... AS ANTI-CRATERING AGENT — In rayon manufacture, Polyrad has been useful both for anti-cratering action and bath mud control.



... IN DEMULSIFICATION COMPOUNDS — Polyrad helps separate water from crude oil in petroleum production. (Courtesy Warner Lewis Co.)



... AS ACID INHIBITOR — Polyrad acts as a wetting agent while controlling the corrosive action of hydrochloric acid, making it possible to clean porcelain and metal with acid compounds.



... CORROSION CONTROL — In all phases of the petroleum industry—primary production, second recovery, refining—Polyrad controls corrosion. (Courtesy Standard Oil Co., N.J.)

NAS4-5

# RESEARCH . . .



DU PONT'S BRAENDLE AND MEYER: For silica, an organic overcoat.

## Drawing a Bead on Soap

Prodded by the increasingly rigorous lubrication demands of modern high-speed machines, grease researchers are quickening the quest for more rugged products. Their efforts were crowned this week by the christening of a new thickening agent that underscores the size and nature of their job. Developed by Du Pont Co., the material is a synthetic surface-esterified silica aimed at replacing soaps in multipurpose greases.

Soap is the weak link in grease formulation, lacks resistance to heat, water, and oxidation. While some soaps (see chart) are better than others, they're generally considered likely targets for replacement by inorganic thickeners. So far, the inorganic threat has come chiefly from synthetic silicas and specially treated clays (e.g., attapulgite, bentonite). Considering that more than a billion pounds of grease are produced annually in the U.S., any new thickener that garners even a piece of this market will be highly remunerative.

Du Pont's modified silica is betting on its combined organophilic-hydrophobic properties to give it the edge over soap. Du Pont says that greases

made with the product will resist boiling water for several days. In addition, the new thickener shows good resistance to oxidation and easily withstands high machine operating temperatures.

Protected by an hydrophobic organic coating; it is made by reaction of a soluble silicate with acid, polymerization of the resulting monosilicic acid into sponge-like aggregates, and finally esterifying the surface of these aggregates with n-butyl alcohol.

A couple of recent Du Pont patents (2,657,149 and 2,676,148) cover the esterification process and the use of the siliceous product in lubricating compositions. But a lot of lab and field work is under way to help the product gain a commercial foothold. Du Pont's G. C. Meyer and R. O. Braendle are spearheading the applications research drive. They have evaluated additive-free greases made with esterified silica, found them to have water resistance, mechanical stability, little change of consistency with temperature, no melting point, good stability in oxygen bomb tests, and to be compatible with soap greases in laboratory wheel-bearing tests.

Moreover, they report, modified

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## Why buyers are hush-hush about fatty alcohols

Some big users of fatty alcohols won't breathe a whisper about how they use these versatile long-chain compounds. Can't blame them: chem-men who are first to seize on the possibilities of new chemicals get the jump on competition. Examples: fatty alcohols add extra sales push to detergents, oil additives, emulsifiers, stabilizers, coatings, etc. Will your product be the next to benefit? The booklet "Possibilities" sums up over twenty-five years of working research on CACHALOT brand fatty alcohols, tells you how to use these vacuum-distilled NF, USP, or technical grades of cetyl, oleyl, and stearyl alcohols. Write M. Michel and Company, Inc., 90 Broad Street, New York 4, N. Y. The largest line of fatty alcohols commercially available in tonnage lots of controlled uniformity is

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**RESEARCH . . .**

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Esterified silicas are new, underscore the research effort going into the development of solid thickeners. Built for punishment, solid thickeners are challenging time-tried soaps—particularly barium and lithium soaps—for a raft of rigorous grease jobs.

		<b>SOLIDS</b>		<b>SOAPS:</b>		
		Barium	Lithium	Calcium	Sodium	Mixed Base (Ca+Na)
Water Resistance	Excellent	Good	Good	Good	Poor	Varies
Max. Continuous Service Temp.	500 F (+)	275 F	275 F	160 F	250 F	Varies
Estimated % of Market	?	1-2	10-15	50-60	15-20	5-10
Price Range in \$/lb. (large amts.)	15-75	15-30	12-25	4-13	5-15	6-30
Uses	All purpose	All purpose		Automotive Chassis Lubrication	Auto Wheel Bearings	Ball Bearings
				Cup Grease	Railroad Car Journal Bearings	Auto Chassis Lube
				Industrial Applications		

solid thickener is easy to use. Greases in the normal consistency ranges can be prepared by premixing 7% to 16% of the modified silica (a white granular solid with an ultimate particle size of 8-10 millimicrons) with lubricating oil and passing the mix through a colloid mill. An entirely mechanical process, this procedure could help infuse more science into the grease maker's art. Grease making with soaps is still largely a job for creative talent.

Right now, Du Pont still has some hurdles to cross with its new silica. Trade-named Valron, it's priced at 75¢/lb., much higher than the soaps it hopes to displace. Output is limited to semicommercial amounts from an installation at East Chicago, Ind. But the company plans to be in full-scale production early in 1957, expects cost eventually to drop to about 50¢/lb. At this price, it's expected to be competitive with soaps, especially in all-purpose greases.

Meanwhile, there's still research to be done on the use of additives in silica greases, particularly where rust prevention is a critical requirement. Ordinarily, inorganic thickeners tend to remove rust-preventives from the oil component. Du Pont, however, is confident that this can be overcome.

Du Pont's success with its modified silica isn't going unnoticed by other major silica researchers. It's a safe bet that Monsanto, Davison Chemical and others will be in on any silica-grease

market that develops in the future. But Du Pont's head-start may be hard to overcome. Already, the company has extensively field-tested Valron greases (including some formulations containing anti-rust agents) in both multipurpose and specialty-type applications. At least one commercial grease prepared from the thickener is said to have performed satisfactorily in a variety of severe industrial applications.

Uncoated silica—a perennial new thickener candidate—can't compete with the esterified form in greases that need water resistance. Straight silica tends to separate out of greases in the presence of water. The alcohol used in esterifying determines the water resistance of the coated variety. Ethyl ester makes a grease with a life of only 18 days at 120 F and 100% relative humidity. In contrast, the n-butyl ester yields a grease that lasts over 150 days under the same conditions. Longer-chain alcohols (e.g., lauryl and stearyl) are other possible esterifiers, but they produce materials that are generally inferior in thickening power.

**Bond Formers:** There is a correlation, too, between the degree of esterification and water resistance. Higher esterification results in high water resistance but a proportionate decrease in thickening power. One explanation for this phenomenon is that unesterified surface hydroxyl or silanol groups contribute to the thickening effect.

(Advertisement)

# CHEMICALS OUTLOOK

December 1954



## ECONOMIC FACTS ON 73%-74% VS. 50% CAUSTIC

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

Recently, much interest has developed in the economics of 73%-74% liquid caustic soda. This is due, we believe, to the freight advantage of the more highly concentrated solutions over 50% liquor.

However, there are many variable factors, other than freight savings, that influence the economics of caustic purchases when buying a high-concentrate caustic. For example: the cost of concentration, the end-use of the caustic soda, presently available equipment, cost of new equipment, available storage at your plant. Other factors for consideration are the quantity of caustic used, plant location, and rate of equipment amortization.

Thus, a very careful study of all factors involved is needed to find the best concentration to meet a company's individual requirements.

## BOOK ON CAUSTIC AVAILABLE

To help you figure all the angles, Wyandotte has available a 60-page book on caustic . . . it has one section devoted entirely to the economics of transportation cost and prices. It is yours for the asking. Write on your business letterhead for a copy.

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Wyandotte Technical Service is particularly qualified to assist you because of our long and varied experience in working with caustic consumers. Wyandotte can supply you with 74% and 50% liquid caustic concentrations, as well as solid, flake, crystal and powdered forms of caustic. Your inquiry will receive our prompt action.



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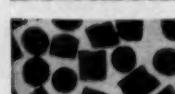
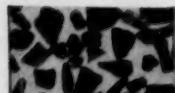
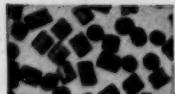
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## RESEARCH . . . . .

These groups are thought to cross-link silica aggregates through a hydrogen bonding mechanism.

The thickening properties of Valron hinge also on the manner in which the ultimate silica particles are clustered together during the aggregation step in processing. Du Pont aims for a sponge-like aggregate rather than a close-packed one, in order to get maximum surface and, consequently, maximum thickening power for a given quantity.

The only entirely synthetic solid thickener on the market, esterified silica has at least two naturally-derived potential solid-thickener competitors.

One of these is entirely inorganic—a purified form of the mineral attapulgite. Called Permagel, it is a hydrated magnesium aluminum silicate made by the Attapulgus division of the Minerals & Chemicals Corp. of America (Philadelphia, Pa.). Its low price (15¢/lb.) is a strong attraction for grease-makers. Development work shows the material to be capable of gelling a wide variety of petroleum base oils and synthetic lubricants. Resultant greases are said to have excellent low-temperature pumpability, no melting or dropping point, stability to mechanical shear, and excellent resistance to the washing action of water. Permagel greases are also claimed to give good corrosion protection.

Unlike Valron, Permagel requires a surface-active agent (cationic, non-ionic, or anionic) to aid its dispersion into lubricating oils and other organic liquids. Choice of dispersing agent depends on such factors as its resistance to heat, oxidation, and water. In general, between 22 and 30% (of the weight of the Permagel) of surface active agent is used.

Permagel's qualifications as a major entry into the upcoming solid thickener scramble are impressive. These include a small needle-like particle shape (highly efficient for producing gels), nontoxicity, ease of dispersion, light color, neutral pH, and high compatibility with other materials.

Both Valron and Permagel still have to reckon with National Lead Co.'s (Baroid Sales) Bentone 34, the third leading candidate for solid-thickener honors. This product is made by reacting dimethylidioctadecyl ammonium chloride with super-centrifuged montmorillonite (hydrous aluminum silicate) in aqueous dispersion. After washing, filtering, drying, and grinding, the ultimate particle size of the resultant cream-colored powder is 1x150x150 millimicrons.

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## RESEARCH . . . . .

is the key to making good greases. In the case of Bentone 34, the addition of a small amount (0.5 to 1.5% of the total slurry) of a polar material (e.g., acetone, methyl alcohol, acetonyl acetone, ethyl alcohol, methylethyl ketone, methyl Carbitol, methyl Cello-solve) speeds gel formation. For specialized greases, additives may be required (to impart rust prevention, oxidation resistance, etc.).

Bentone greases are claimed to have good water resistance, metal adhesion and wear characteristics, are likely to see increasing use in heavy-duty service. Examples: turret lathe bedways (in presence of water-type coolant), and on annealing oven roller bearings (at 450 F).

Soap-makers still supply over 90% of the thickeners used in greases, do not as yet seem to be perturbed over the inorganics. How seriously they ultimately take this new competition will depend upon how effectively the inorganics barter high performance for high cost.

### Double Reward

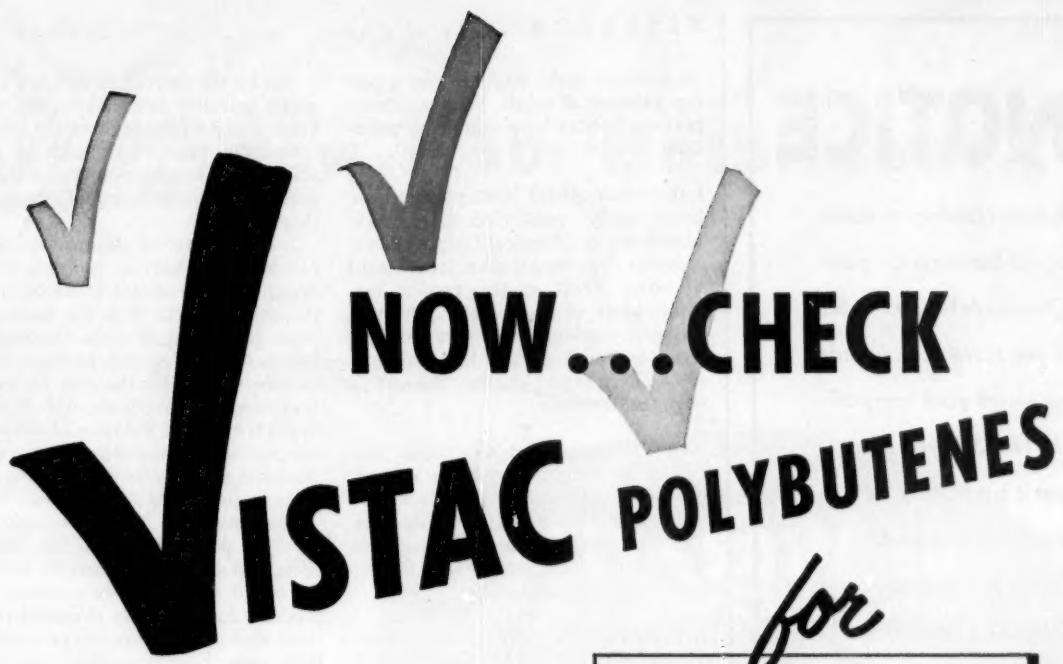
Thanks to the resourcefulness of three university researchers, an old phosphate fertilizer manufacturing problem appeared, this week, to have been solved. A possible new source of uranium is the coproduct of their work.

Very simply, Columbia University chemistry professor Victor LaMer and research associates Robert Smellie, Jr. and P. K. Lee have worked out a method of extracting the solids from the waste of phosphate acidulation. If their lab technique proves out, it could permit the effective processing of this waste with the consequent recovery of low-grade uranium ores.

A very tough customer to deal with, the phosphate waste is a slimy 2-5% colloidal suspension of extremely fine particles that won't settle, and can't be economically filtered. What to do with it is the problem. To preclude the pollution hazard, Florida phosphate rock processors have been funneling the soupy fluid, millions of tons at a time, into expansive artificial lakes.

Now, they may be able to eliminate these useless blots on the landscape. By adding a polyelectrolyte (50 to 500 parts to every 1 million parts of waste), the Columbia chemists have managed to convert the slime into a filterable curdy mass. Concentration of the reagent is said to be critical to the method's effectiveness.

In experiments thus far, potato starch proved to be the best natural agent for the job. Reason: it contains 0.17% phosphate that combines with



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Eastman Kodak Company).

## RESEARCH . . . . .

the calcium in the waste to give a porous network of solids. Some synthetic polyelectrolytes have also given promising results.

**Lab Switch:** About 30 employees have been newly transferred from Food Machinery & Chemical Corp.'s central research department (San Jose, Calif.) to other FMC manufacturing divisions. Most of the research chemists formerly working on government defense contracts at San Jose will join research groups at the company's chemical divisions.

**New Reagent:** Pilot Chemicals Inc. (Waltham, Mass.) offers a new reagent grade of *p*-bromomandelic acid for analysis of zirconium and hafnium. The chemical is claimed to be superior to other analytical reagents for the determination of these metals.

**Esso Extra:** The radiation laboratory, planned by Standard Oil Development Co. at its Linden, N. J. research center (*CW Newsletter*, Nov. 27, '54), will cost over \$1 million. According to the company's president, Eger Murphree,

it will be the petroleum industry's first major privately financed facility of its kind. The decision to erect the lab followed two years of research by Esso scientists at Brookhaven National Laboratory of Atomic Energy Commission (Upton, N.Y.).

Esso plans to use gamma rays, from radioactive cobalt, as its main radiation tool. Now stored at Brookhaven, the cobalt source is in the form of a pipe, 13 in. long, 2 in. in diameter. It has been undergoing neutron bombardment there for the past 2½ years, is expected to have a strength of 3500 to 4000 curies at the time of delivery, next spring. In comparison, the world's total supply of refined radium represents an estimated 2400 curies.

The company has been exploring possible peacetime uses for atomic energy since 1938, when it studied the use of uranium (then a mining by-product) in promoting chemical reactions and as a corrosion preventive. Right now, Esso researchers speculate that atomic energy holds highest promise for them in polymerization processes. They are eyeing possibilities in the making of synthetic rubbers,

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PENCIL IN HAND, researcher T. Heeg of Ontario Agricultural College (Guelph) checks results of a rapid soil pH determination developed in the school's department of soils. By the usual technique, from 5 to 15 minutes are needed for pH meter electrodes to stand in soil

solution; the new method cuts this time to a fleeting 20 seconds, is applicable to standard instruments such as the Beckman meter shown above.

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## RESEARCH . . .

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Other radioisotope research planned by Esso includes tracer work on the flow of fluids, the movement of grease in bearings, and in chemical analysis. Using tracers, the effects of lubricants on engine wear, for example, can be determined in 30 minutes, without dismantling the engine.

Esso's James Black will head the new laboratory.

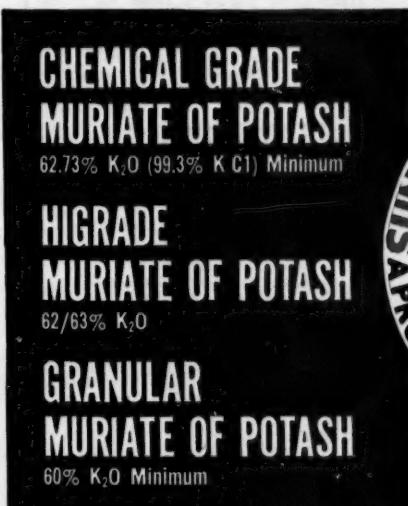
**More Labs:** Du Pont Co. plans to construct another laboratory building at its Wilmington, Del., experimental station. This one—lastest of a series of new labs—will cost \$1,815,000, shelter long-range and fundamental research for the company's explosives and organic chemical departments. Two stories tall, it will provide facilities for about 40 scientists.

• And on the Illinois Institute of Technology campus (Chicago) the Armour Research Foundation expects to start building a \$1-million lab, around March 15, 1955. The one-story structure will house the Foundation's electrical engineering research and a proposed nuclear reactor (included in the cost estimate). Completion is scheduled for next October.

**Seventh Book:** A new book, seventh and last in the 1954 series, rounds out this year's run of government publications containing abstracts or brief descriptions of government-owned inventions. Titled, "Ceramic, Paper, Rubber, Textile, Wood and Other Products and Processes," it lists 308 abstracts of patents in these fields. It's available (order no. PB 111470) at \$1/copy from the Office of Technical Services, U.S. Dept. of Commerce (Room 6227), Washington 25, D.C.

**Red Tide:** Two new developments promise aid to Floridians in their war on the Red Tide (CW, Nov. 20, '54, p. 80). At Polk City, Fla., E. B. Sutton, defeated Republican candidate for Congress, reported that plans are under way to spread copper sulfate over a Red Tide area in the Gulf of Mexico. According to Sutton, three planes and six boats will spread the chemical over an infested area between Sanibel Island and Cape Romano (30 miles south of Fort Myers) as soon as weather conditions permit. While there is no major outbreak of the fish-killing plague at this time, small patches have recently appeared. Joseph Bell of the U.S. Fish & Wildlife Service Red Tide laboratory at Fort Myers explains that calm water conditions are necessary to spread the cop-

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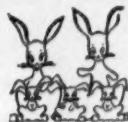
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### RESEARCH . . . . .

per sulfate, without excessive waste. The new experiments are aimed at determining the most efficient and least expensive manner of using the chemical. In another approach to the problem, F. G. Walton Smith, marine researcher at the University of Miami, is probing the effect of phosphorus (from adjacent phosphate mining fields) on the growth of Red Tide. So far, he says, "there has been no relation found between Red Tide and the production of pebble phosphate." But Howard Odum, University of Florida biologist contends that "the repeated localization of the Red Tide blooms in areas near the mouths of phosphatic rivers suggests some causal factor is localized there."

**Nitro Pipe:** A quartet of Du Pont inventors has worked out a new way to safely move nitroglycerin from one place to another, and has garnered a patent (2,694,404) on the idea. The method is to emulsify the nitroglycerin in water, then send the emulsion through a pipe, separating quantities of emulsion by columns of plain water. In this manner, even if one batch of the emulsion should separate and explode (an event the inventors deem highly unlikely), the detonation, it is claimed, will not be transmitted along the entire length of the pipe.

So far, nitroglycerin has been piped experimentally by this method for a distance of 600 ft. at a rate of 700 lbs./hour. Ideally, the length of the nitroglycerin emulsion column in the pipeline is 75 ft., the water separation 25 ft.

Nitro transportation has always been a ticklish business because of the compound's highly unstable nature. Ordinarily, it is transported around the dynamite-mixing house in small quantities, using rubber-tired handcarts. The carts are made of nonsparking materials, require smooth runways that are remote from work areas. Piping the nitro should be a big improvement over the present costly and dangerous handling techniques.

The inventors are Du Pont researchers Alexander Luft, Vincent H. Waldin, Samuel E. Walker, and Philip G. Wrightsman.

**Can Lab:** Now a-building in Chicago is Continental Can Co.'s \$5-million research center. The new laboratories will occupy a three-story building (250,000 sq. ft. of floor space) on a 7½-acre site. More than 550 scientists will be housed in the facilities. They'll be looking at can coatings, sealants, solders, fluxes and a spate of other chemical materials.

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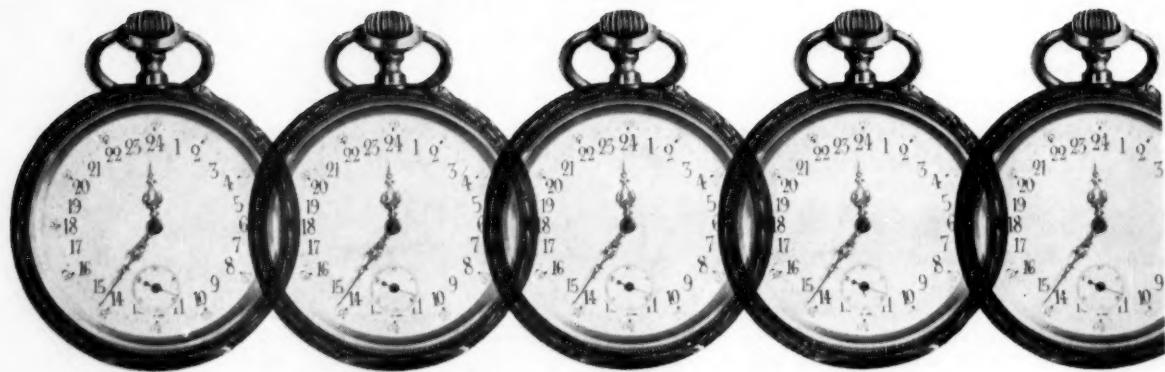
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